AN EVALUATION OF THE EFFECTIVENESS OF A SERVICE PROVIDER SHORT COURSE TO PREVENT FETAL ALCOHOL SYNDROME

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MWNJUD002

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Declaration

I, Judith Mwansa, hereby declare that the work on which this dissertation is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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ABSTRACT

Background: The Western Cape Province of South Africa has the highest reported rates of Foetal Alcohol Syndrome (FAS) in the world. Reported statistics on FAS in this province show that 40.5 to 46.4 per 1000 children aged 5 to 9 years have FAS compared to developed nations that reported 0.5 to 2 cases per 1000 births. The loss in human potential is immeasurable and various studies have shown that the financial cost is formidable. Each child affected by FAS may require an estimated $1 million to $2 million over the course of their lifetime to support remedial medical, educational and social costs. Primary prevention programmes targeted to women at risk of alcohol-exposed pregnancies could lead to measurable reductions in the incidence of FAS. An alcohol-exposed pregnancy (AEP) is a pregnancy that results when a sexually active woman is not on effective contraception and is involved in risky drinking.

Aim: To evaluate the effectiveness of a training intervention to improve screening, identification and management of women at risk of alcohol exposed pregnancies.

Methods: Training was offered on screening, counselling and referral of women with or at risk of alcohol-exposed pregnancies to all available service providers in the Bergrivier and Swartland municipalities in the West Coast Winelands district of the Western Cape Province, South Africa with Cederberg municipality as the control site. Two components to this project evaluated the effectiveness of a training program. Firstly, a before-after evaluation study with a cross sectional comparison was conducted. Service providers were assessed by means of a structured questionnaire before and after the training. There were two trainings conducted: one in May offered to staff from social services and another in July/August to healthcare staff. A second study interviewed service users, at facilities in both the intervention and control areas, as they left the clinics after being seen by service providers. To ascertain the practice of the service providers, comparisons were made between intervention and control sites before and after the training. Data were analyzed using STATA version 10.

Results: There were twenty six service providers trained in May and sixty trained in July/August; and twenty three service providers served as controls in the Cederberg area. In these trainings, the proportions of respondents indicating alcohol being harmful to the foetus as well as specifically identifying alcohol consumption during pregnancy as a risk increased after the trainings. There were significantly more
providers after the training in July/August who reported after the training specifically that it is alcohol consumed during pregnancy that causes FAS ($\chi$ p-value < 0.001). The number of service providers reporting smoking as a cause of foetal harm reduced non-significantly post-intervention. In both May and July/August trainings, participants became more confident, after the training, in identifying a woman at risk of an alcohol-exposed pregnancy and knowing where to refer such a woman (Signrank p-value < 0.001). Comparison of trained service providers and controls also showed significant differences in these healthcare worker behaviours.

A total of three hundred and seventy five women users of the health services were surveyed in both the intervention and control sites pre- and post training of service providers. In the intervention site, women in the post intervention survey were 2.13 times more likely to have been given alcohol advice than those in the pre intervention survey (CI: 1.27 to 3.53) and more likely to be given general advice on pregnancy care (OR=1.53; CI=1.19 to 3.82). They were also more likely to be counselled (OR=1.3; CI=1.05 to 1.56) on and offered (OR=1.1; CI=1.06 to 2.10) family planning. Analysis of the time-group interaction variables in a logistic regression model taking account of the controls confirmed that these effects were related to the effect of the training. Results on healthcare worker behaviour showed that women attending antenatal care in both pre- and post intervention surveys were more likely to have been asked if they drank alcohol than those not attending such services (p-value < 0.001).

**Conclusion:** This is the first study to produce evidence for effectiveness of training to address prevention of AEPs. A short training course given to service providers appears to be effective in building their capacity to manage women with or at risk of alcohol exposed pregnancies. When conducting such training, there is need to address all possible causes of harm to a foetus so as not to shift the participants’ attention from causes of foetal harm other than alcohol. Governments have a role to play in combating FAS and the solutions lie in government’s power to make sure service providers have the capacity to address FAS.
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My daughters Kalaba and Chabu for their great endurance
Dedication

This dissertation is dedicated to my dear and loving husband Henry Kambwile, Jr for encouraging me to take up studies in Public Health and for being there for me always.

I also dedicate this dissertation to the memory of my dear mother and friend Angela Chabu who had always emphasized to me from early childhood so strongly the importance of education.
# Abbreviations, acronyms and definitions

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>AEP</td>
<td>Alcohol Exposed Pregnancies</td>
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<tr>
<td>AIDS</td>
<td>Acquired Immuno Deficiency Syndrome</td>
</tr>
<tr>
<td>BAC</td>
<td>Blood Alcohol Concentration</td>
</tr>
<tr>
<td>CDC</td>
<td>Centre for Disease Control</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence interval</td>
</tr>
<tr>
<td>CTDCC</td>
<td>Cape Town Drug Counseling Centre</td>
</tr>
<tr>
<td>DOP</td>
<td>System A system where workers on wine farms are given alcohol as wages</td>
</tr>
<tr>
<td>DOPSTOP</td>
<td>A South African association that was created to enable people take control over alcohol and other substance abuse</td>
</tr>
<tr>
<td>DOT</td>
<td>Directly observed treatment</td>
</tr>
<tr>
<td>FAS</td>
<td>Fetal Alcohol Syndrome</td>
</tr>
<tr>
<td>FASD</td>
<td>Fetal Alcohol Spectrum Disorders</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<tr>
<td>NGO’s</td>
<td>Non-governmental organizations</td>
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<tr>
<td>RNTCP</td>
<td>Revised National TB Control Programme</td>
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<tr>
<td>SANCA</td>
<td>South African National Council on Alcoholism and Drug Dependence</td>
</tr>
<tr>
<td>SDP</td>
<td>Sensible Drinking Project</td>
</tr>
<tr>
<td>T-ACE</td>
<td>Tolerance, Annoyed, Cut down, Eye opener</td>
</tr>
<tr>
<td>TB</td>
<td>Tuberculosis</td>
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1.1 Introduction

The consumption of alcohol during pregnancy is the key risk factor for Fetal Alcohol Syndrome (FAS) which is one of the leading causes of preventable birth defects. FAS is a complex problem closely related to alcoholism and substance abuse among women. Described for the first time some 35 years ago, FAS has since been the subject of many studies conducted for the purpose of providing insight into its specific nature, documenting its prevalence or identifying ways to prevent it and help those who are afflicted with it.

1.2 Background and Significance

Alcohol interferes with the developing brain at multiple levels and alters the coordinated developmental schedule of the central nervous system (Olson et al, 2001). Prenatal alcohol exposure can result in a continuum of effects including growth deficits, dysmorphology and/or complex patterns of behavioural and cognitive difficulties that influence an individual's functioning throughout their lifespan (Premjie et al, 2007). It is one of the leading causes of preventable mental and physical retardation among infants the world over (CDC, 2001). It is relatively common in some communities, expensive (in terms of remediation offered) yet completely preventable. The teratogenic effects of alcohol on humans have been established beyond reasonable doubt making FAS one of the most important human teratogenic conditions known today.
The U.S Institute of Medicine has developed standard criteria for diagnosis of FAS. The essential elements of the definition are said to be prenatal/postnatal growth retardation, characteristic facial appearance in infancy and central nervous system dysfunction (Floyd et al. 2005). FAS has also been associated with heavy, episodic (binge) maternal drinking in pregnancy; advanced maternal age; high gravidity and parity; unstable marital status; cigarette use; and use of other drugs (Ernhart et al. 1987). The general literature on alcohol abuse among females profiles heavy drinking women as individuals who: smoke and abuse drugs; cohabitate with alcoholic males; suffer more frequent sexual dysfunction; have alcohol abusing parents; initiated regular drinking at an early age; and have low self-efficacy, poor life goals, and few interests (Baily, 1990; Day et al, 1991; Schlesinger et al, 1990).

In past years, studies from various countries have highlighted the repercussions of FAS including impaired social development, reduced independence and increased risk of suicide among others (Merrick et al, 2006). In their review of long term observation studies, Merrick and his colleagues (2006) also found that there is need for assistance to affected individuals throughout their lives to ensure optimal level functioning. This means that the impact of FAS on both individuals and society is substantial.

1.3 Statement of the Problem and Study Justification

FAS has been identified as a major public health concern in South Africa. It is now epidemic in the Western Cape province of South Africa (May, 2000). The province is known to have the highest documented rates of FAS in the world. Compared to the
developed world which has 0.5 to 2 cases per 1000 births (May et al, 2001), a study in one part of the Western Cape Province reported an alarming rate of 40.5 to 46.4 per 1000 children aged 5 to 9 years with FAS (May et al, 2000). A second cohort study in the same area was conducted among children in their first grade at school and rates as high as 65.2 to 74.2 per 1000 were reported (Viljoen et al, 2005). This rate has been reported as having increased in another study by May’s group (May et al, 2007). In this last study, May and his colleagues found the rate of FAS and partial FAS to range between 68.0 and 89.2 per 1000.

Although the payment of alcohol to farm workers as part of their conditions of service, known as the DOP system, is no longer legal in South Africa, alcohol abuse is one of the major challenges facing the health services in the Western Cape. (Draft Provincial Health Plan, 1995; London et al, 1998a; McLoughlin, 2007). Evidence indicates that although the DOP system no longer operates as widely or with such intensity as originally introduced under colonial agriculture (Scully, 1992), a number of farms in the region continued to provide workers with alcohol as part of their conditions of service well into the 1990’s (Te Water et al, 1998; London et al, 1998b). For example, the estimates of the prevalence of the DOP system in the early 1990’s ranged from less than 2% based on industry estimates (Louis, 1997) to 20% (London et al, 1998b). Even in the absence of a DOP system, alcohol dependence among farm workers continues to play a major role in enmeshing farm workers in a cycle of poverty and dependence from which escape is extremely difficult (London, 1999; McLoughlin, 2007). In fact, the consumption and misuse of alcohol in some subcultures of the population in the Western Cape is socially
accepted (Viljoen et al, 2002). This often results in social problems such as child abuse, violence against women and family disruption. These social problems are major obstacles to access to health and social services for farm residents (Te Water et al, 1998). The DOP system has not only resulted in a cycle of poverty and alcohol dependence. The high prevalence of FAS in the Western Cape is another devastating consequence of this legacy (May et al, 2000).

Having discussed the nature of the problem, this dissertation focuses on contributing to the prevention of FAS and is subdivided into five main chapters. Chapter one has introduced the background and significance of the study. Chapter two discusses in detail a review of the literature on prevention of FAS through capacity building of service providers. This literature review provides the basis for identifying the research question to be addressed in this study and informs the objectives of the study. Chapter three describes the design and methodology of the study. Chapter four presents the results. Chapter five discusses the findings of the research and implications of the study. These inform the recommendations for the future regarding FAS prevention. Limitations of the study and reflections of the author are also discussed here.
2.1 What is Fetal Alcohol Syndrome (FAS)?

The effects of alcohol on fetal development have been of interest to scientists for many decades. In 1973, Jones and Smith introduced the term “Fetal Alcohol Syndrome” to describe abnormalities in children born to mothers who drank large amounts of alcohol during pregnancy. A systematic review by Henderson and colleagues (2007) has shown that a number of studies clearly proved the teratogenic effects of alcohol. Lemoine (2003), in his case study, described the anomalies observed in 127 children of alcoholic parents. These children had abnormal facial features, severe growth retardation and psychomotor retardation with behavioural disorders.

Abel (1999), in his research study entitled “What really causes FAS?”, noted that during embryonic development, alcohol can interfere with the formation of several organs and cause heart defects, bone abnormalities, kidney disorders as well as vision and hearing problems. He also pointed out that the brain is the organ most sensitive to alcohol. Since it forms throughout pregnancy and continues to develop even after birth, it is highly vulnerable and as a result can be affected at all developmental stages. The neurotoxic effects of alcohol on the central nervous system are thought to occur via different mechanisms and exposure to this substance can interfere with the proliferation, migration and survival of nerve cells (US Secretary of Health and Human Services, 10th Special Report to the US Congress 2000).
Imaging techniques of FAS children show smaller brains along with damage to the specific parts of the brain, namely the corpus callosum, the cerebellum, the basal ganglia and the hippocampus, whereas other regions are not affected by alcohol exposure (Mattson et al., 2001; Viljoen, 2005). These anomalies also have consequences for the child in terms of psychomotor, cognitive and socioemotional development (Abel, 1999; US Secretary of Health and Human Services, 10th Special Report to the US Congress 2000) and they have reported average IQ (intelligence quotient) in the region of 63 and 68 (Viljoen, 2005; Streissguth et al., 1991) as well as neurobehavioral sequelae (US Secretary of Health and Human Services, 10th Special Report to the US Congress 2000).

According to Astley and Clarren (2000), the 4-digit diagnostic code reflects the magnitude of the four key diagnostic features of FAS in the following order:

1) Growth deficiency
2) The FAS facial phenotype (facial dysmorphology)
3) Brain damage/dysfunction
4) Gestational alcohol exposure

Phenotypically, the midface is hypoplastic in children with FAS. The facial dysmorphology includes shortened palpebral fissures, flattened nasal bridge, shortened nose with upturned nares, a long smooth upper lip with thin vermilion border and micrognathia (Viljoen, 2005). Furthermore, all the body measurements in the FAS children may be affected both prenatally and postnatally. In many cases, the measurements are usually all less than average for age and sex and display either a
reduction in head circumference or a reduction in weight and height together. These measurements remain deficient throughout life (Viljoen, 2005).

2.1.1 Risk Factors for FAS

Alcohol consumption in pregnancy is the key causal factor for FAS. The extent of the teratogenic effects of alcohol depends on various factors, both biological and environmental including the quantity of alcohol consumed by the mother, the period during which the foetus was exposed, the frequency and length of exposure, the biological susceptibility of the mother and foetus, the combination of alcohol with other teratogens, the mother’s nutritional, health and socio-economic status, her obstetrical care and living conditions (Stratton et al, 1996). While alcohol consumption during pregnancy is a necessary causal factor, it is not sufficient on its own as a cause. For example, not all children exposed to alcohol will necessarily develop FAS, indicating that there are other co-factors playing a role in susceptibility for FAS. Nonetheless, a woman whose first-born child has FAS and who continues to drink during a second pregnancy greatly increases the risk on the foetus (Abel, 1999).

Studies conducted in a region with the highest documented FAS rates in the world-the Western Cape Province (May, 2000) - have shown that in addition to the risk factors found earlier by Stratton and colleagues in 1996, low educational attainment, short stature, being unmarried, having a drinking partner during pregnancy and living in a rural area were also risks for the condition (Viljoen et al, 2002; May et al, 2005; May et al, 2008).
About two decades ago, it was known that only consumption of large quantities of alcohol on a chronic basis (Hatfield, 1985) or binge drinking i.e. five or more drinks per day (Project CHOICES Research Group, 2002) had detrimental effects on the foetus. However, an association has been found between consumption of less than 2 drinks per week by pregnant women and aggressive behaviour in their offspring (Hanson et al, 1978; Sood et al, 2001 cited in Project CHOICES Research Group, 2002).

2.2 The Burden
A study done in North Dakota, USA (Klug & Burd, 2003) comparing children with and without FAS (the latter as controls) from birth through 21 years of age found that the mean annual cost of healthcare was USD2,342 per capita more than that for the controls. Lupton et al (2004) also found that annual population cost estimates for the USA ranged from $75 million in 1984 to $4.0 billion in 1998 while lifetime cost estimates vary from $596,000 in 1980 to $1.4 million in 1988 per individual. In Canada, the lifetime cost estimate per child with FASD was found to be one million Canadian dollars (Stade et al, 2007). No such cost estimates have yet been derived for South Africa. However, it is likely to be substantial as seen from the 18.1% contribution by FAS to the overall alcohol-attributable burden of disease in South Africa making it rank third to alcohol use disorders and interpersonal violence (Schneider et al, 2007).

2.3 Prevention
Since FAS is a result of insults to the foetus from alcohol that is consumed by a pregnant woman, its prevention is two-fold. Firstly, it may be prevented if no alcohol is consumed
during pregnancy or secondly, FAS will be prevented if there is no pregnancy at all. The majority of women do not realise they have conceived until they are about eight to twelve weeks pregnant and this period is critical as this is when organogenesis occurs. By the time they realise they are pregnant, these women may have consumed a substantial amount of alcohol causing damage to the neurological development and general growth of the foetus. Therefore, contraception is as important as alcohol abstinence in the prevention of alcohol-exposed pregnancies. An alcohol-exposed pregnancy (AEP) is a pregnancy that results when a sexually active woman is not on effective contraception and is involved in risky drinking (Project CHOICES, 2002). Project CHOICES (2002) defined risky drinking as “current drinking of more than seven drinks per week (frequent drinking), or consuming five or more drinks in a single day (binge drinking) more than once within the past 6 months”.

Ingersoll and colleagues (2005) conducted a study in which they looked at reducing alcohol-exposed pregnancy risk in college women. They found that a significant number of women are at risk for alcohol-exposed pregnancies owing to binge drinking paired with ineffective use of contraception. Ineffective contraceptive use, in this study, referred to no use, incorrect use of an effective method or use of an ineffective method. They concluded that the risks of unintended pregnancy and AEP among drinking women in college merit greater prevention efforts. Another study by Day et al. (2002) pointed out that fertile women who are sexually active, consume more than seven drinks per week or binge drink, and do not use effective contraception are at risk for an alcohol-exposed
pregnancy and having a child with lifelong impairments in intellectual, cognitive and psychosocial functioning.

In 1997, CDC initiated a multi-site pilot study (phase I clinical trial) to investigate the use of a dual intervention focused on both alcohol-use reduction and effective contraception among childbearing-aged women at high risk for an alcohol-exposed pregnancy (Project CHOICES, 2003). In this study, women reduced their risk for alcohol-exposed pregnancy by reducing their alcohol consumption risk, increasing their use of effective contraception or both. Among high-risk women overall, 69% were able to reduce their risk for an alcohol-exposed pregnancy (CDC Report, 2003).

Because abstaining from alcohol does not require additional expenditure, ceasing alcohol consumption by pregnant women would be the cheapest way to prevent FAS. However, prevention is more complex than strategies which rely solely on women to change behaviour and which place the entire burden on women to ensure healthy outcomes. The complicated interrelation between alcohol consumption, gender, pregnancy status, the woman’s partner and extended family, the community and the healthcare professionals means that the prevention of FAS and other alcohol related birth defects requires a comprehensive program encompassing an array of strategies and approaches (Stratton et al, 1996). Effective primary prevention must address the issue of poverty which is the root cause of several multifaceted public health problems like substance abuse, lack of comprehensive health education, unplanned pregnancy and inadequate pre and postnatal care (Seattle-King County, Department of Public Health- www.metrokc.gov/health/ -
50k - 20 Nov 2006). In addition, primary care providers can play a role in preventing FAS.

### 2.4 Capacity Building

It is recognised that prevention of Fetal Alcohol Spectrum Disorders (FASD’s) cannot be achieved without informed and educated healthcare providers (Floyd et al., 2006). In their article of pre-conception care, Summers and Price (1993) point out the importance of thorough screening of women of reproductive age. They recommend that midwives help women decide whether they are psychologically prepared for motherhood through group discussions and family-timing scenarios. Menstrual (to help detect ovulation), contraceptive and sexual histories play an important role at this stage. In addition, counselling about dangers of cigarette smoking, alcohol drinking, and drugs must be included. Although this is too late for the women who are already pregnant, it is important for future pregnancies.

Healthcare providers are key educators regarding appropriate alcohol use. Through training, they can be taught to screen, counsel and refer women at risk of alcohol-exposed pregnancies and other alcohol related problems. These courses can also address the issue of brief intervention and its role in the treatment of alcohol problems. Brief intervention refers to short, one-on-one counseling sessions that focus on changing patient behaviour and increasing patient compliance to therapy (Fleming & Manwell, 1999). Through this technique, people get to start thinking differently about their alcohol use. They begin to think about or make changes in their alcohol consumption. For those who choose to
drink, brief intervention provides skills that allow safer consumption of alcoholic beverages i.e. reduce risk of harmful drinking. Fleming and colleagues (1997; 1999) have presented compelling evidence to support the effectiveness of brief intervention for alcohol-related problems in primary care settings. Brief interventions are widely used in primary care settings to address other health behaviours.

The literature on brief motivational intervention to reduce alcohol and drug abuse has shown that it works (Rendall-Mkosi, 2005). However, there is no evidence of empirical evaluations of brief motivational intervention applied to healthcare providers attending to women with or at risk of AEPs in order to reduce FAS.

Screening tools to identify problem drinkers are another important step in building service provider capacity for prevention of FAS. Chang (2001) supports the idea of screening pregnant women for alcohol consumption. She advocates for the use of the T-ACE tool to screen for alcohol consumption among pregnant women and explains that it can be used as a start to probe pre-conception alcohol consumption history. The latter is what should be the target if we are to achieve prevention of FAS as this entails prevention of alcohol exposed pregnancies. The T-ACE test consists of 4 short questions that take no more than a minute to answer (see Table 2.0 on next page). It can either be self-administered or administered by the attending clinician. Chang (2001) found this instrument to be highly specific (89 %) and reasonably sensitive (69 %). A positive T-ACE test is an opportunity to discuss pre-conception alcohol history with the client and
from this; the clinician can give either brief motivational intervention or refer the client appropriately. Table 2.0 gives a representation of a typical T-ACE test.

Table 2.0 T-ACE

<table>
<thead>
<tr>
<th></th>
<th>Tolerance: How many drinks does it take to make you feel high?</th>
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<tbody>
<tr>
<td>T</td>
<td>Have people Annoyed you by criticizing your drinking?</td>
</tr>
<tr>
<td>A</td>
<td>Have you ever felt you ought to Cut down on your drinking?</td>
</tr>
<tr>
<td>C</td>
<td>Eye opener: Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover?</td>
</tr>
</tbody>
</table>

The T-ACE is used to screen for pregnancy risky drinking, defined here as the consumption of 1 ounce or more of alcohol per day while pregnant. Scores are calculated as follows: a reply of “More than two drinks” to question T is considered a positive response and scores 2 points, and an affirmative answer to question A, C, or E scores 1 point, respectively. A total score of 2 or more points on the T-ACE indicates a positive outcome for pregnancy risky drinking.


Claassen (1999) recommends the use of the CAGE instrument in communities with high prevalence of alcohol dependence. This screening instrument, like the T-ACE, is useful in identification of alcohol dependence among drinkers and it has been used in South Africa (Claassen, 1999). It comprises four simple questions and a score of 2 or greater is sufficient to suspect one as alcohol dependent (Appendix C). Claassen (1999) found this tool to be 100 % sensitive and 78 % specific when used in a South African community with a high prevalence (56 %) of alcohol dependence.
Training in the use of brief interventions related to alcohol abuse convinced Rendall-Mkosi (2005) of the need to increase the capacity of professionals and lay people to deal with alcohol and drug related problems in their family and work settings. In this capacity building training organised by the Sensible Drinking Project (SDP), 241 clinical and lay workers in the Cape Metro and the West Coast Winelands were recruited. The participants were taught brief interventions and the techniques involved for addressing alcohol problems. Data was collected through pre- and post-training questionnaires and through interviews with clinic managers and patients. The participants found the training useful, and reported increased awareness of the underlying factors to alcohol abuse and learnt to be less judgemental of people abusing alcohol and other drugs.

In a study done in the West Coast Winelands district of the Western Cape Province by Dona Tversky (2001), it was found that alcohol-related screening practised with pregnant women attending antenatal services at their first booking interview was quick but ineffective and predictably poor in outcome. When asked if they take alcohol, the pregnant women’s usual answer was in the negative. From focus group discussions, the women admitted to lying to staff with reasons ranging from fearing nurses’ antagonism to wanting to get done with the interview as quickly as possible. Nurses were also aware of the dishonesty in this interaction, though not to the extent that mothers’ reports suggested. Tversky further states that continued denial of alcohol use by women will negate the usefulness of interventions to reduce drinking and any information system put in place to monitor alcohol use. In this regard, she suggests that structured screening for alcohol-related problems be less judgemental with a comfortable atmosphere.
It is known that nurses sometimes display negative attitudes towards pregnant women who abuse substances (Selleck & Redding, 1998 cited in Tversky, 2001). However, studies have reported that staff with more education on substance abuse and pregnancy show more positive attitudes towards clients (Coles et al., 1992 cited in Tversky, 2001) and feel less judgmental (Gerace et al., 1995 cited in Tversky, 2001).

A cross sectional study done in the Cape Town metropole (Koopman et al., 2008) to explore alcohol-related practices among general medical practitioners (GPs) illustrates the fact that GPs do see a substantial number of patients with alcohol related problems and also how support and training is important in equipping staff with the necessary skills to handle patients with such problems. The study was conducted on 50 GPs between November 2004 and April 2005. It showed that during this period, the GPs reported seeing 11 to 30 patients with serious alcohol-related problems. In addition, only 12% of the GPs felt they could effectively and confidently help patients with alcohol problems. The majority felt that they could only do this if they were given adequate training to do so as regards to the intervention tools required. It was thus concluded that there is a need to equip GPs with skills and intervention tools, as well as appropriate support in order for them to conduct interventions for risky drinking.

Lessons might be drawn about healthcare providers’ success in screening by looking at other contexts and diseases. A study conducted in Akaki, Ethiopia (Woyessa & Ali, 2003) where malaria was a sizable problem, reviewed data from health facility clinical records of individual patients and weekly surveillance as well as epidemic control reports.
to evaluate case detection, treatment and intensive vector control activities as strategies used to control the epidemic. This, however, proved difficult due to lack of a systematic malaria control program. Contribution from an adjacent program (Oromia Malaria Control Program) and the Federal Ministry of Health to control this epidemic were reckoned substantial. The researchers concluded that service provider capacity building targeted to early detection, prevention and control of malaria epidemics and preparedness is very important.

Another study done in Lilongwe, Malawi (Harries et al., 2003) to assess diagnostic processes in patients labelled as Tuberculosis (TB) suspects highlights the importance of capacity building. This was a study to develop the diagnostic capacity of tuberculosis officers. It was found that of the 900 hospital admissions, 153 (17%) were TB suspects. Of these 37% were diagnosed with TB, 38% were discharged with another diagnosis and 25% died or absconded during investigations. This was the first attempt at developing a research capacity in hospital TB officers in Malawi. Although it was only partially successful, it may help improve the speed of TB diagnosis in hospital in-patients.

From the foregoing study examples, it is evident that the capacity of service providers is vital in the management of different health problems. There is need for healthcare providers to probe as they screen patients in order to ensure a thorough job. When dealing with sensitive topics like alcohol and drug abuse, the healthcare providers should not be judgemental as this will make clients uncomfortable and possibly be untruthful. This is clearly seen in the results of the Sensible Drinking Project (Rendall-Mkosi, 2005).
Tversky (2001) points out the need to educate service providers and improve their skill in alcohol screening. Consequently, they will be less judgemental and will have a more positive attitude to their clients.

In summary, the literature has shown that FAS is very common in the Western Cape Province of South Africa. This condition is entirely preventable through abstinence of alcohol consumption by pregnant women. Literature has also shown that interventions with service providers to increase their capacity to manage women at risk of alcohol exposed pregnancies may result in reduced risky drinking. However, there is no evidence in respect to alcohol exposed pregnancies. Therefore, there is need to investigate whether capacity building for service providers will reduce the risk of alcohol exposed pregnancies.
CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

3.1 Aim of the Research

The overall aim of this research was to evaluate the effectiveness of a training intervention to improve screening and management of women at risk of alcohol-exposed pregnancies

3.1.1 Specific Objectives

More specifically, the objectives were:

- To identify service providers involved with management of women at risk of alcohol-exposed pregnancies and describe the nature of services provided.
- To describe the knowledge, attitude and practice (reported by service providers) related to prevention of AEPs and management of women at risk of AEPs amongst service providers both before and after the training.
- To describe service providers’ practices related to prevention of AEPs before and after the training through surveys of service users both before and after the training.

This chapter presents the research design and methodology employed. It also covers the issues of ethical approval and communication.
This dissertation project is part of a larger project called the Comprehensive Fetal Alcohol Syndrome Prevention Program in the Western Cape and Gauteng Provinces of South Africa. This project is funded by the Centre for Disease Control and Prevention (CDC) and its overall aim is to develop a model for the prevention of FAS and Alcohol Related Birth defects (ARBD) that can be applied in different areas of South Africa. The team comprises researchers from the University from Pretoria (UP), University of Cape Town (UCT) and the Medical Research Council (MRC) of South Africa. The lead organisation is the School of Health Systems and Public Health of the University of Pretoria.

The comprehensive prevention project was divided into three phases namely: Formative, Intervention and Evaluation phases. The formative phase (from September 2005 to August 2006) aimed at understanding the current patterns, norms and consequences of alcohol consumption amongst women of childbearing age, and the availability and appropriateness of current alcohol related services. In the intervention phase (from September 2006 to October 2008), the main objective based on the findings of the first phase, was to develop and implement a detailed intervention program and monitoring plan. This phase had different kinds of interventions for the different levels of risk of AEPs in women of reproductive age (Figure 3.1). This dissertation research comprised one of the sub-projects within the comprehensive prevention project that addressed high risk women within a tiered model adopted by the project (Figure 3.1). It involved short training of service providers to improve screening, counselling and referral of women with alcohol problems and thereby reduce incidence of alcohol-exposed pregnancies. The
evaluation phase (from November 2008 to December 2009) involves evaluating components of the intervention programme and assesses the extent to which they could be sustained on a larger scale, in an integrated model. Although part of a larger project, the author conceptualised the research with the support of the project team, designed the study protocol, oversaw the data collection and analysed, interpreted and wrote up the findings. The research report therefore represents the author’s work in its entirety.

Figure 3.1: Intervention Strategy Model


3.2 Study Setting

In the Western Cape Province, the West Coast Winelands district was the site selected for the study. Three municipalities (Swartland, Bergrivier and Cederberg) were chosen for the baseline survey in Phase I (formative phase of the comprehensive prevention project) from September 2005 to August 2006. The choice was based on spread of type of agricultural activity, distance and recommendations of managers. For this study, evaluating a training intervention with service providers, the intervention sites were the Bergrivier and Swartland municipalities while the Cederberg municipality served as the
control site. These sites were chosen due to their close proximity to Cape Town so as to facilitate efficient logistics for the trainers. The study started in November 2007 and ended in September 2008.

**Figure 3.2: Study Site**

![Study Site Map]

*SOURCE: http://en.wikipedia.org/wiki/Cape_Winelands_District_Municipalities*

### 3.3 Study Design

This study had two sub studies. These were a) service provider component and b) service user sub study (Figure 3.3).
3.3.1 Service Provider Sub study

A before-after study type was employed for this sub study. A structured short course program (see Appendix A) was offered to the service providers. This focused on contraception, alcohol abstinence during pregnancy, child spacing, screening, counselling and referral of women at risk of alcohol-exposed pregnancies and other alcohol related problems. Two trainings were offered, one in May and the other in July/August, both in the year 2008.
The project initially set out to train only healthcare providers, specifically doctors and nurses, in the study site with healthcare providers divided into two groups for training to ensure continuity of services at the clinics. The training duration was planned for two days for each group.

Service provider trainings were scheduled to take place in October 2007. However, efforts to organize trainings during the intended time period proved difficult – only 4 nurses arrived for a training session on 24th October 2007, whereas 15 to 20 were anticipated. Being too small a sample size, this was taken as a second pilot study for the service provider questionnaire. The first pilot study was done in July 2007 on nurses serving as school nurses in a number of schools in Atlantis, Cape Town.

After the initial setback of only 4 nurses coming to attend the training, we embarked on a different approach in an effort to ensure that the training took place by involving management centrally in the organization. For this reason, we approached the District Manager of Health in November 2007 for assistance in getting staff to attend the training. This time, all healthcare staff including health promoters and counsellors were identified for participation as they also attend to women with or at risk of alcohol exposed pregnancies. Management put the project on the following year’s planner for their staff.

At this time, it was decided also to include staff from Department of Social Services and from some Non-governmental Organizations since they also attend to women with issues pertaining to maternal and child health. This was done because including social service
workers in such training programmes has potential benefits. This fact was established in a similar study conducted in Norway where training social workers was found to be effective in recognizing FAS and related conditions (Elgen et al, 2007). We therefore approached the Social Services Department with the 2008 dates proposed by the Department of Health and they were agreeable.

In January of 2008, we were informed by the Department of Health that there were clashes in their annual planning calendar and the training was rescheduled from May to late July 2008. We were also advised to reduce the duration of the training sessions from two to one day sessions because the healthcare staff could only be given one day off to attend the training. We were assured that this time attendance would be emphasized and that absenteeism from either work or the training would be regarded by management as poor performance.

The rescheduling of the dates and the reduction in the duration of the sessions caused some problems for the trainers contracted to conduct the trainings. The Cape Town Drug Counselling Centre (CTDCC), who were the training providers and who had run a number of similar training programs successfully in the past had booked training dates for May 2008. However, by the time we informed them of the rescheduled dates, they were unavailable for July/August. In addition, they were not comfortable with running training over one day. However, because the Department of Social Services were ready to have the training in May we continued with the plan of CTDCC to conduct the May training. We then hired an independent trainer to conduct the July/August training using
the same material covered by the CTDCC. Because this professional had extensive experience in conducting training as well as counselling in the field of drug and alcohol abuse, she had the capability to deliver the training at the same level of competence as the staff from the CTDCC. This meant that the project had two trainings held at different times, of different durations, conducted by different trainers and consisting of different populations. The July/August training comprised, predominantly, the healthcare staff while the May training comprised staff from social services and NGOs (including nurses employed by these organizations). However, the content, format and learning objectives of the two courses were kept the same.

We had planned a controlled study with a before-after study in both the intervention and control sites. However, due to the delays in the training an after study could not be included for the controls. There was only one set of data for the controls. Therefore, we compared post-intervention data from the intervention site to data from the control site in a cross sectional manner.

3.3.2 Service User Sub study

The second component to this research involved a survey of women of reproductive age receiving services from the targeted service providers (“users”) to ascertain the behaviour of service providers. This was an indirect way to assess any change in service providers’ behaviour pre and post training. For this sub study, only service users from healthcare facilities whose staff had undergone training were interviewed. There were two reasons for this. Firstly, at the time of the pre-intervention surveys, the training was not planned
to be offered to any service providers other than those in the health sector. Secondly, the number of users at facilities other than health facilities was too low to warrant inclusion. Women were interviewed as they left the facilities. The surveys were conducted both before and after the intervention. The pre-intervention surveys were conducted in November, 2007 while the post intervention surveys were in September 2008. These surveys were also done simultaneously in a control site (Cederberg) both pre and post the intervention.

3.4 Population and Sampling

The intervention took place in the Bergrivier and Swartland municipalities. Given the two sub studies, there were two populations - the service providers and the clients seen by service providers (service users).

The service provider population for the before-after study included the staff at the antenatal clinics, family planning clinics, well-baby clinics and general primary healthcare units in the Bergrivier and Swartland municipalities as well as all staff from Non-governmental organizations (NGOs) and social services dealing with maternal and child health in the districts. Any service provider likely to come into contact with a woman at risk of an AEP comprised the study population. The May training comprised service providers from NGOs and social services who received a two day training program. In the July/August training, the participants, all healthcare workers, were divided into three groups and each group received training over one day. These were offered on three consecutive Fridays. The healthcare workers’ training sessions were only
a day for each group as this was a directive from the office of the District Manager of Health. The latter explained that due to the shortage of human resource in the area, the sessions needed to be as short as possible.

Service providers in the Cederberg municipality served as controls. These were all from the health sector specifically from antenatal clinics, family planning clinics, baby clinics and general primary healthcare units. The control service provider population was all available service providers in the area.

For the service user survey, the population comprised women aged 18 to 45 years receiving primary level healthcare services in the two intervention sites as well as the control site. There were 10 clinics in the study area and all clinics were included. The selection of the number of service users per clinic were stratified across the clinics entailing selection of women at risk of AEPs proportional to the outpatient attendance reported at those clinics for the year 2006. The women were selected by systematic sampling. Every 3rd client, starting with a first client, was taken as part of the sample. This was done on two consecutive days of the week at each clinic before moving onto the next clinic.

3.5 Sample Size Determination

3.5.1 Service Providers

Because of the two strata to the training participants (healthcare workers working in the health services, and NGO/social service providers working in services other than
healthcare), the sample size calculation was applied for each stratum. For purposes of sample size determination and in the absence of literature, it was assumed that service providers had 20% level of knowledge on FAS and practice directed at its prevention before they underwent training and it was expected that after the training this would increase to 60%. Presuming a level of significance of 0.05 and a power of 80%, a sample size of 25 service providers was identified per stratum using the Stata 10.0 program (StataCorp. 2007). Due to the scarcity of healthcare staff in the West Coast, there were only 72 healthcare providers (67 nurses and 5 doctors) working in the study area. In the NGOs and social services identified as dealing issues pertaining to maternal and child health, there were in total 32 members of staff. Therefore, there was no need for sampling and all available service providers were invited to the trainings. This took account of a modest design effect (1.2) where providers came from the same facilities.

### 3.5.2 Service Users

For the sub study of service users, sample size was also calculated using Stata 10.0. Due to lack of literature, it was assumed that normally 40% of the total women attending the clinics are screened for alcohol. This proportion was expected to increase to 70% after the service providers had undergone the training. With a power of 80% and a level of significance of 0.05, minimum sample size required was calculated to be 41 both at before and after the service provider training. Therefore, a sample size of 50 at the baseline survey and another 50 after the training in each site (in total 200) was statistically acceptable and was thus chosen. The clinics served as clusters and therefore this calculation took into account a modest design effect, also approximately 1.2.
3.6 Measurement

3.6.1 The Intervention

A structured short course program formed the intervention. It focused on contraception, alcohol abstinence during pregnancy, child spacing, screening, counselling and referral of women at risk of alcohol-exposed pregnancies and other alcohol related problems (Appendix A).

The aim of the short course was to provide participants with appropriate attitudes and skills to identify women at risk of an alcohol-exposed pregnancy, facilitate a reduction in alcohol intake, and promote effective family planning.

3.6.1.1 Outcomes for Participants

It was expected that after the training, participants, would understand what Fetal Alcohol Syndrome is and what the clinical presentation of FAS individuals consists of, and where to refer suspected cases for official diagnosis.

Specifically, they would:

1. Be aware of the range of factors leading to alcohol abuse by women.
2. Have the knowledge to use and interpret appropriate screening tools with women of reproductive age for risk of alcohol-exposed pregnancies.
3. Have a positive attitude towards women who abuse alcohol and believe that they can change their health related behaviour with support.
4. Be able to apply basic non-judgemental brief counselling and make appropriate referrals to specialist services.
3.6.1.2 Responsibilities of the Trainer

The duties of the trainer were to:

1. To equip primary healthcare staff with the necessary skills needed to prevent alcohol-exposed pregnancies and manage women at risk of having such pregnancies, through participatory learning.

2. To provide information on alcohol abuse and tools for screening for problem drinking, as well as apply intervention and referral skills with the aim of motivating patients to adopt positive health behaviour change.

In collaboration with the CTDCC and the independent trainer who conducted the July/August training, we developed a training manual. Generalizability of the manual was an important aspect which was taken into account at its design stage. The training manual was piloted on four nurses in Moorreesberg in a two day training conducted prior to onset of data collection.

The manual specifically designed for these training courses, addressed the following:

1. Skills to effectively screen for alcohol problems, and identify women at risk of alcohol-exposed pregnancies

2. Brief motivational interviewing techniques

3. Contraception or no alcohol or both

4. Attitude towards women with alcohol problems

5. Systems to improve case management (referral)
The training program was an interactive one starting with the Pig exercise as the ice breaker (Appendices A and B). It comprised a number of group sessions so as to encourage participation. English and Afrikaans were the languages which were predominantly employed for communication in the training sessions.

3.6.2 Measurement Instrument

The instruments applied for both service providers and users were structured questionnaires. These were devised in English, translated to Afrikaans and then back translated to ensure accuracy. Both English and Afrikaans copies of the questionnaire were available depending on the respondent’s language preference (Appendices D to G).

3.6.2.1 Service Provider Instrument

The questionnaires for the service providers were self-administered and included mainly closed-ended questions and a few open-ended questions (Appendices D and E). Each questionnaire included eighteen questions and approximate time of completion was 20 minutes. Identification was by date of birth although for purposes of future follow up and possible assessment, there was a separate attendance list bearing the details of each participant including names. The future follow up was a planned booster half a day training session to consolidate the knowledge acquired during the trainings. This list was locked in a filing cupboard in the FAS project office at the University Cape Town to maintain confidentiality. The list also helped link a particular questionnaire to matching participant details on the attendance register.
3.6.2.2 Service User Instrument

The service user questionnaire was interviewer-administered and consisted of ten closed-ended questions (Appendix G). Interviewers were available to speak fluently in the language preferred by the client. The questionnaire was also translated to Afrikaans (Appendix H). Data were collected anonymously.

3.6.3 Variables

Table 3.1 Variables of interest as well as those reported/derived from them

<table>
<thead>
<tr>
<th>Service Providers</th>
<th>Variables of interest</th>
<th>Variables reported/derived</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a) awareness of and knowledge about fetal alcohol syndrome</td>
<td>- Gender</td>
</tr>
<tr>
<td></td>
<td>b) screening practice and knowledge of referral options for women with or at risk of alcohol-exposed pregnancies</td>
<td>- Age in years</td>
</tr>
<tr>
<td></td>
<td>c) practice regarding identification, referral, and prevention of alcohol exposed pregnancies</td>
<td>- Occupation</td>
</tr>
<tr>
<td></td>
<td>d) level of confidence regarding routine screening for and identification of women with or at risk of alcohol-exposed pregnancies</td>
<td>- Area of work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Duration in current area of work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cause of harm to unborn baby (smoking, alcohol or red meat consumption)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- What FAS is, its cause and prevention</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- History of managing a woman with or at risk of an alcohol-exposed pregnancy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Services available for women with or at risk of alcohol-exposed pregnancies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Confidence regarding routine screening for and identification of women with or at risk of AEPs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Confidence regarding knowledge of where to refer a woman at risk of an AEP</td>
</tr>
<tr>
<td>Service Users</td>
<td>a) counselled on use of family planning</td>
<td>- Date of birth</td>
</tr>
<tr>
<td></td>
<td>b) offered any contraception</td>
<td>- Purpose of clinic visit (family planning, antenatal care, child welfare or other primary healthcare services)</td>
</tr>
<tr>
<td></td>
<td>c) asked about alcohol abstinence if not on any contraception</td>
<td>- Whether they know they are pregnant or not</td>
</tr>
<tr>
<td></td>
<td>d) given advice regarding harmful effects to the fetus if alcohol is consumed during pregnancy</td>
<td>- Whether or not on contraception</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Asked for current consumption of alcohol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Counselling on and/or offered contraception</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Advice on alcohol harmful effects on the fetus</td>
</tr>
</tbody>
</table>
3.6.4 Validity and Reliability of Instrument

To ensure quality, the following measures were used:

- Standardised questionnaires.
- Two pilot studies were done and necessary changes made to the questionnaires before the actual data collection.
- For the interviewer-administered questionnaires, interviewers had at least secondary level of education and were fluent in English and Afrikaans. They were all trained prior to the onset of the study.
- Some dummy questions were included in the questionnaires i.e. to which the correct answer was “no” but to which over-reporting respondents might think to answer yes. These questions give a hint as to whether or not the respondent is being straight and not merely giving answers in either positive or negative direction. For example, the question on cause of harm to the fetus included exercise and fruit consumption as options for harmful activities. Respondents who were over reporting positive responses would be identified from positive responses to this question when the correct answer is negative.

3.7 Pilot Study

The piloting of the service provider questionnaire was in July 2007 on nurses serving as school nurses in a number of schools in Atlantis, Cape Town. Atlantis was chosen as the area for piloting the questionnaire because of its similarity to the West Coast in terms of language pattern, high rates of alcohol abuse and FAS. It is located on the outskirts of the Cape Town Metropole area.
After an attempted but failed data collection process in October 2007, the data collected was used as a pilot to compliment to the initial pilot. The questionnaires of 4 healthcare workers (nurses) in Moorreesberg in the Swartland area who underwent training were administered both before and after the training. The pilot also helped to firm up the training intervention.

The pilot study was to allow any ambiguous questions to be clarified. It also helped determine the average duration of time spent on answering a questionnaire. Thereafter, a schedule (timetable) for the training was set. After the pilot study, the questionnaires were entered onto an Excel spreadsheet and then exported to Stata 10.0 program (Statacorp, 2007) for analysis. Frequency distributions and univariate statistics were conducted to identify any problems during data entry and this facilitated data cleaning and setting up of entry files.

3.8 Data Management and Analysis

The questionnaires were coded (Appendices F and I) and the data entered into Microsoft excel spreadsheets. Double entry of data was done for validation ensuring that missing data was accounted for. Data cleaning was achieved by first exporting the data files to Stata 10.0, then running frequency distributions and univariate statistics to identify any possible errors during data entry. Frequency and cross tabulations were performed and results presented in various tables and graphs.
The main analysis involved a comparison of service provider knowledge and practice related to prevention of FAS before and after the training. Chi square statistics were estimated to check for associations between variables for example, being trained and giving alcohol as an answer for cause of FAS. Dummy variables were derived from variables that had more than two categories. Variables with scores of up to 4, for example confidence scores of 1 to 4, were grouped into 2 new variables (scores of 3 and 4 were coded as confident while scores of 1 and 2 were coded as not confident) and chi square statistics applied. Multivariate regression analysis was conducted to determine predictors of the knowledge and practice of service providers based on the user survey. Interaction variables between time (post/pre training) and group (intervention/control) were generated to compare the training effect of the intervention groups. The interaction variables measured the outcome of interest at different levels of a predictor variable. Regression models generated consisted of different outcome variables: (a) asked if take alcohol, (b) family planning counselling given and (c) advice on dangers of alcohol consumption during pregnancy, purpose of clinic visit, group, time and the timegroup interaction variable. When the timegroup interaction variable was found to be insignificant in a model, it was dropped from the model as this meant that the time effect for the two groups was the same. The model was re-run without the interaction variable. Then the time and group effects were interpreted.

Some of the analyses excluded women that were already pregnant at the time of the interview. An example is when the women were asked whether they drank alcohol. Here, the aim of the training was to stop women who are not on any family planning from
taking alcohol so that, should they fall pregnant, they will not have an AEP. Therefore, pregnant women are by definition no longer at risk of AEP and would not be the target in this as the alcohol advice would come rather late.

3.9 Ethical Considerations

Ethics approval to conduct the study was acquired from the University of Cape Town Research Ethics Committee (REC ref 180/2007). Permission regarding the dates for the training was sought from the Western Cape Department of Health. Prior to commencement of the study, the project was tabled at a meeting where key stakeholders including the District Health Managers, the DOPSTOP Association and SANCA participated. Agreement from the in-charge of the different clinics was negotiated through the Provincial Department of Health.

Participants were informed that participation was voluntary and they reserved the right to withdraw from the study at anytime without penalty. The service users were assured that their refusal to be interviewed or withdrawal before the end of an interview would not affect their access to the services at the clinic in the future. To ensure confidentiality, the questionnaires had subject numbers and did not have the names of the participants. The findings of the study will be reported to the participating clinics and their catchments’ areas as well as all the stakeholders. Any publications done after the study will ensure that no one can be identified from the report.
4.1. Service Providers

4.1.1. Participants

A total of 109 service providers participated in the study. Of these, 83 were healthcare staff and 26 were social services and/or NGO staff. Staff from NGOs comprised social workers, community workers, home based caregivers as well as a few nurses (four). Eighty six service providers received training. Ninety percentage of the healthcare staff and eighty percentage of the staff from NGOs were trained. None of the 5 doctors working in the public sector attended the training. Of the total number trained, 96 % were female. The mean age for the participants was 44 years (Table 4.1).

Table 4.1 Demographics of the service providers

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male n (%)</th>
<th>Female n (%)</th>
<th>Total (109)</th>
</tr>
</thead>
<tbody>
<tr>
<td>May training</td>
<td>2 (7.7 %)</td>
<td>24 (92.3 %)</td>
<td>4 (3.7 %)</td>
</tr>
<tr>
<td>July/August</td>
<td>2 (3.3 %)</td>
<td>58 (96.7 %)</td>
<td>105 (96.3 %)</td>
</tr>
<tr>
<td>Control</td>
<td>0 (0 %)</td>
<td>23 (100 %)</td>
<td></td>
</tr>
<tr>
<td>healthcare workers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The trainings conducted in May and July/August varied both in number and type of participants (Figure 4.1). There were fewer training participants in May (n=26), who were mostly home based caregivers from Social Services and Non-governmental Organizations (NGOs). The July/August training (n=60) comprised entirely healthcare workers, the majority of whom were nurses (70 %).
Figure 4.1: Types of service providers

4.1.2 Areas of Work

81% of participants from the May training were involved in community work while 42% of those from the July/August training were involved in primary healthcare (Table 4.2). Of note here is that some people worked in more than one area.
Table 4.2: Areas of current work and previous history of management of a woman with an AEP

<table>
<thead>
<tr>
<th>Areas of work</th>
<th>May group (n=26)</th>
<th>July/August group (n=60)</th>
<th>Overall (n=86)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenatal clinic</td>
<td>0%</td>
<td>37%</td>
<td></td>
</tr>
<tr>
<td>Family planning</td>
<td>4%</td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>Child welfare</td>
<td>12%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Counseling of women clients</td>
<td>12%</td>
<td>32%</td>
<td>N/A</td>
</tr>
<tr>
<td>Community work</td>
<td>81%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Primary healthcare</td>
<td>-</td>
<td>42%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Previous history of management of a woman with/at risk of AEP</th>
<th>Any Management</th>
<th>Identification of a woman with AEP</th>
<th>Counseling of women clients</th>
<th>Raising awareness of alcohol dangers</th>
<th>Referral of women with/at risk of AEP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>51%</td>
<td>0%</td>
<td>38%</td>
<td>12%</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>87%</td>
<td>10%</td>
<td>63%</td>
<td>65%</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>77%</td>
<td></td>
<td>56%</td>
<td>49%</td>
<td>26%</td>
</tr>
</tbody>
</table>

*Categories are not mutually exclusive

4.1.3. History of treating women with/at risk of AEP

About half of the participants in the May training had previously managed a woman with or at risk of an alcohol exposed pregnancy (Table 4.2). This differed significantly from the 87% found in the July/August training (chi square p value < 0.001). As regards to the type of management that was taken, it was found that none of the May training participants had ever identified a woman with or at risk of an alcohol-exposed pregnancy whereas 6 (10%) participants from the July/August training had identified such a woman before. Counseling of women was the past experience most commonly reported in both trainings.
4.1.4. Cause of harm to an unborn baby (Alcohol/Smoking)

Fig. 4.2.: Graphs of percentage of respondents reporting Alcohol/Smoking as a cause of harm

Table 4.3.: Percentage of respondents agreeing with risk factors

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Pre %</th>
<th>Post %</th>
<th>Chi sq. p value</th>
<th>Pre %</th>
<th>Post %</th>
<th>Chi sq. p value</th>
<th>Pre %</th>
<th>Post %</th>
<th>Chi sq. p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>96</td>
<td>100</td>
<td>0.31</td>
<td>95</td>
<td>100</td>
<td>0.08</td>
<td>95.35</td>
<td>100</td>
<td>0.04</td>
</tr>
<tr>
<td>Smoking</td>
<td>42</td>
<td>23</td>
<td>0.14</td>
<td>80</td>
<td>77</td>
<td>0.66</td>
<td>68.6</td>
<td>60.50</td>
<td>0.27</td>
</tr>
<tr>
<td>Red meat</td>
<td>0</td>
<td>0</td>
<td>1.00</td>
<td>1.7</td>
<td>1.7</td>
<td>1.00</td>
<td>1.16</td>
<td>1.16</td>
<td>1.00</td>
</tr>
<tr>
<td>Exercise</td>
<td>0</td>
<td>0</td>
<td>1.00</td>
<td>1.7</td>
<td>0</td>
<td>0.32</td>
<td>1.16</td>
<td>0</td>
<td>0.32</td>
</tr>
</tbody>
</table>

4.1.4.1 May Training

The percentage of participants in the May training that said alcohol causes harm to an unborn baby increased slightly from 96 % before the training to 100 % after the training (Table 4.3). The percentage of participants that reported that smoking causes harm decreased after the training from 42 % to 23 %. However, these findings were statistically insignificant (chi square p values = 0.31 and 0.14 respectively). No participant reported red meat or exercise as a cause of harm both before and after the May training.
4.1.4.2. July/August Training

The percentage of participants that said alcohol causes harm to an unborn baby increased from 95 % before the training to 100 % after the training while that for those that reported that smoking causes harm decreased slightly after the training from 80 % to 77 %. However, these differences in the findings were statistically insignificant (Table 4.3). The percentage of participants that reported red meat as a cause of harm to an unborn baby did not change after the training. There was one participant before the training that reported exercise as a cause of harm to the fetus. However, no participant after the training reported exercise as harmful to the fetus.

Analysis of the responses from both trainings combined showed that the slight increase overall in the percentages of respondents who said that alcohol causes fetal harm before and after the trainings was significant (chi square p-value = 0.04). As for smoking, red meat consumption and exercise, the differences in the results before and after the trainings were not statistically significant (chi square p-values > 0.05), although there was a slight drop in those reporting smoking as harmful.

4.1.5. Services for women with/at risk of AEP

Availability of services for counseling, education, referral and support were reported by 62 % and 44 % service providers in May and July training, respectively. The reasons for the non availability of these services varied between service providers trained in May and those trained in July/August. While the majority of service providers in May reported the lack of skilled staff as a cause for non availability of the named services, the most
common reason reported in the July/August training was poor referral structure for women at risk (Table 4.4).

Table 4.4: Reasons for non availability of services

<table>
<thead>
<tr>
<th>Reason</th>
<th>May Training</th>
<th>July/August Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unskilled staff</td>
<td>50 %</td>
<td>13 %</td>
</tr>
<tr>
<td>Uneducated staff</td>
<td>33 %</td>
<td>-</td>
</tr>
<tr>
<td>No response</td>
<td>17 %</td>
<td>18 %</td>
</tr>
<tr>
<td>Lack of time (few staff)</td>
<td>-</td>
<td>35 %</td>
</tr>
<tr>
<td>Poor referral structure</td>
<td>-</td>
<td>43 %</td>
</tr>
</tbody>
</table>

4.1.6. Cause of FAS

Figure 4.3  Graph showing the proportions of service providers reporting alcohol as a cause of FAS

Following the training, the proportion of respondents reporting specifically ‘alcohol consumed during pregnancy’ (rather than just reporting alcohol consumption in general) as a cause of FAS increased 2 to 3-fold in both trained groups (Figure 4.3 and Table 4.5). The increases were from 19 % to 46 % and 25 % to 77 % in May and July/August training.
trainings, respectively. The increase in May was not significant (chi sq p-value = 0.06) whereas that in July/August training was found to be significant (chi sq p-value < 0.001). Analysis of the combined results from both trainings showed a statistically significant increase in the proportion reporting alcohol consumption in pregnancy as a cause of FAS after the training (chi sq p-value < 0.001).

Table 4.5: Percentage of respondents agreeing with risk factors

<table>
<thead>
<tr>
<th></th>
<th>May group (n=26)</th>
<th>July/Aug group (n=60)</th>
<th>Total (n=86)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage</td>
<td>Chi sq. p value</td>
<td>Percentage</td>
</tr>
<tr>
<td>Alcohol consumption during pregnancy</td>
<td>19</td>
<td>46</td>
<td><strong>0.06</strong></td>
</tr>
</tbody>
</table>

4.1.7. Confidence Scores

Scores were recorded to measure how confident the participants were at identifying a woman with or at risk of AEP, knowledge of where to refer such a woman, routine alcohol screening in women of reproductive age and emphasizing to their clients/patients the importance of alcohol abstinence if not on contraception or vice versa. The results for the May training showed that the median scores for the confidence scores in terms diagnosing a woman with or at risk of an AEP, for the knowledge of where to refer a woman with or at risk of an AEP, for routine alcohol screening of women of reproductive age and that for advice on alcohol abstinence versus family planning all increased significantly after the training (Table 4.6). The July/August training median confidence scores increased from 2 before the training to 4 after the training for all of the above categories. Overall, participants were significantly more confident at managing women at
risk of alcohol-exposed pregnancies after the trainings than before the trainings in both May and July/August (Table 4.6).

Table 4.6: Median Confidence Scores for May and July trainings

<table>
<thead>
<tr>
<th>Cause</th>
<th>May Training</th>
<th>July/Aug Training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median (range)</td>
<td>Median (range)</td>
</tr>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Identifying a woman with/at risk of AEP</td>
<td>2 (1-4)</td>
<td>3 (2-4)*</td>
</tr>
<tr>
<td>Knowledge of where to refer such a woman</td>
<td>2 (1-4)</td>
<td>4 (2-4)*</td>
</tr>
<tr>
<td>Routine alcohol screening in women of reproductive age</td>
<td>2 (1-4)</td>
<td>4 (2-4)*</td>
</tr>
<tr>
<td>Advising on alcohol abstinence versus family planning</td>
<td>2 (1-3)</td>
<td>3 (2-4)*</td>
</tr>
</tbody>
</table>

*Sign rank p-value < 0.001, comparing median post-training to median pre-training

4.1.8. Service Providers in Intervention (post training) and Control Sites Compared

4.1.8.1. Cause of harm to an unborn baby

Table 4.7: Percentage of service providers reporting on cause of harm to unborn baby

<table>
<thead>
<tr>
<th>Cause</th>
<th>Percentage</th>
<th>Intervention Site-post training (n=60)</th>
<th>Control (n=23)</th>
<th>Chi sq p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>100</td>
<td>69.6</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Smoking</td>
<td>76.7</td>
<td>91.3</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>Red meat</td>
<td>1.7</td>
<td>4.4</td>
<td>0.48</td>
<td></td>
</tr>
<tr>
<td>Exercise</td>
<td>0</td>
<td>0</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

There was a statistically significant difference between trained and untrained service providers with respect to the response regarding alcohol as a cause of harm to an unborn baby (Table 4.7). However, no statistically significant difference was found between service providers in the intervention site (post training) and those in the control site as
regards to either smoking or red meat consumption causing harm to an unborn baby. No participant reported exercise as harmful to the fetus.

4.1.8.2. Services for women with/at risk of AEPs

In terms of counseling, referral and support services being options for women with or at risk of alcohol-exposed pregnancies, it was found that a significantly larger proportion of the service providers in the intervention site said yes to these options compared to the service providers in the control site (Table 4.8).

Table 4.8: A comparison of services available for women at risk of AEP

<table>
<thead>
<tr>
<th>Type of Services</th>
<th>Intervention (60)</th>
<th>Control (23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counseling</td>
<td>45%</td>
<td>0%</td>
</tr>
<tr>
<td>Referral</td>
<td>15%</td>
<td>9%</td>
</tr>
<tr>
<td>Support</td>
<td>17%</td>
<td>5%</td>
</tr>
</tbody>
</table>

*All chi sq p-values < 0.001

4.1.8.3. Cause of FAS

Table 4.9: Percentage of service providers reporting on cause of FAS

<table>
<thead>
<tr>
<th>Cause of FAS reported as:</th>
<th>Untrained Service Providers (%)</th>
<th>Trained Service Providers (%)</th>
<th>Chi sq p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol consumption during pregnancy</td>
<td>47.8</td>
<td>76.7</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

All respondents in both sites reported alcohol as a part of the cause for FAS. However, 77% of trained service providers responded specifically that it is alcohol consumed during pregnancy that causes FAS (Table 4.9). This was significantly higher than the 48% of the untrained service providers that responded the same way (p value < 0.001).
4.1.8.4. Confidence scores

At baseline, confidence scores about prevention and management of women with or at risk of alcohol-exposed pregnancies of service providers in the intervention site were similar to those of the controls. However, post-intervention scores were more than those of the controls (Table 4.10a). The proportions of respondents who were confident (scores 3 or 4) and not confident (scores 1 or 2) in aspects of AEP prevention between intervention and control sites were then compared. It was found that there was a statistically significant difference in the confidence scores between the service providers in the intervention site after training than those in the control site for all skills and knowledge questions (Table 4.10b).

Table 4.10a: Median Confidence Scores for trained July/August participants and controls

<table>
<thead>
<tr>
<th></th>
<th>Median score (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intervention (n=60)</td>
</tr>
<tr>
<td></td>
<td>Pre</td>
</tr>
<tr>
<td>Identifying a woman with/at risk of AEP</td>
<td>2 (1-3)</td>
</tr>
<tr>
<td>Knowledge of where to refer such a woman</td>
<td>2 (1-3)</td>
</tr>
<tr>
<td>Routine alcohol screening in women of reproductive age</td>
<td>2 (1-3)</td>
</tr>
<tr>
<td>Advising on alcohol abstinence versus family planning</td>
<td>2 (1-3)</td>
</tr>
</tbody>
</table>

Table 4.10b: Comparison of percentages of confident service providers in intervention site after training and service providers in control site

<table>
<thead>
<tr>
<th></th>
<th>Percentage confident</th>
<th>Pearson’s chi sq</th>
<th>Chi sq p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Post-intervention (n=60)</td>
<td>Control (n=23)</td>
<td></td>
</tr>
<tr>
<td>Diagnosing a woman with/at risk of AEP</td>
<td>100</td>
<td>30.4</td>
<td>51.71</td>
</tr>
<tr>
<td>Knowledge of where to refer such a woman</td>
<td>100</td>
<td>21.7</td>
<td>59.96</td>
</tr>
<tr>
<td>Routine alcohol screening in women of reproductive age</td>
<td>100</td>
<td>30.4</td>
<td>51.71</td>
</tr>
<tr>
<td>Advising on alcohol abstinence versus family planning</td>
<td>100</td>
<td>34.8</td>
<td>47.76</td>
</tr>
</tbody>
</table>

*Confident defined as scores of 3 or 4
4.2. Service Users

4.2.1. Profile of Study Participants

A total of 375 women were interviewed in the short exit interview surveys and the response rate was 100% i.e. there were no refusals. Of these, 55.7% were aged between 18 and 29 years, the majority of whom had gone to the clinics either for routine primary healthcare services (40%) or had taken their baby to the well baby clinic (41.1%). The overall mean age was 29 years. There was about 10.4% women overall that were pregnant at the time of the interviews (Table 4.11). Of these, 1.1% had gone to seek services other than antenatal care.
Table 4.11: Characteristics of the Interviewees

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>PRE</th>
<th></th>
<th>POST</th>
<th></th>
<th>Pvalue (pre/post)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*C(31)</td>
<td>**I(120)</td>
<td>Pvalue (C/I)</td>
<td>Total</td>
<td>*C(164)</td>
<td>**I(60)</td>
</tr>
<tr>
<td>Age, mean yrs (sd)</td>
<td>29.5 (7.2)</td>
<td>28.6 (7.4)</td>
<td>0.55</td>
<td>28.8 (7.3)</td>
<td>30.2 (7.6)</td>
<td>28.7 (7.2)</td>
</tr>
<tr>
<td>Visit purpose n(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Family planning</td>
<td>1(3.2)</td>
<td>10(8.3)</td>
<td>0.47</td>
<td>11(7.3)</td>
<td>3(5.0)</td>
<td>21(12.8)</td>
</tr>
<tr>
<td>- Antenatal care</td>
<td>3(9.7)</td>
<td>10(8.3)</td>
<td>0.75</td>
<td>13(8.6)</td>
<td>10(16.7)</td>
<td>12(7.3)</td>
</tr>
<tr>
<td>- Well baby clinic</td>
<td>13(41.9)</td>
<td>46(38.3)</td>
<td>0.74</td>
<td>59(39.1)</td>
<td>18(30.0)</td>
<td>77(47.0)</td>
</tr>
<tr>
<td>- Primary Healthcare</td>
<td>14(45.2)</td>
<td>52(43.3)</td>
<td>0.86</td>
<td>66(43.7)</td>
<td>29(48.3)</td>
<td>57(34.8)</td>
</tr>
<tr>
<td>Pregnant n(%)</td>
<td>5(16.1)</td>
<td>12(10.0)</td>
<td>0.50</td>
<td>17(11.3)</td>
<td>9(15.0)</td>
<td>13(7.9)</td>
</tr>
</tbody>
</table>

*Control Site
**Intervention Site
4.2.1.1. Comparison of profile of women

Of the 120 women interviewed in the intervention site, 7 of them did not report their ages. The overall mean age at baseline was 28.8 years and mean ages of the women in the intervention and control sites were similar (chi square p value = 0.55). There were no significant differences in the purpose of the clinic visits between women in the two sites before the intervention (Table 4.11). However at the post-intervention visit, women attending the intervention site clinics were more likely to visit for family planning and well baby services; and less likely to be visiting for antenatal care and primary health care services (Table 4.11).

4.2.1.2. Profile of women pre- versus post-intervention

4.2.1.2.1. Intervention Site

The overall mean age of the women interviewed in the pre- and post-intervention surveys was 28.6 years and 28.7 years respectively. The proportions of women seeking the various services were similar (Table 4.11). Of women interviewed, 25 (8.8 %) were pregnant at the time of the interview. Of the 25 pregnant women, 12 were in the pre-intervention survey while 13 were in the post intervention survey (Table 4.11). Two of the pregnant women in the pre-intervention survey and one from the post-intervention survey were at the clinics for services other than antenatal care.

4.2.1.2.2. Control Site

The combined mean age for the women in the control site surveys was 30 years and there was no significant difference between the mean ages in the pre- and post-intervention
surveys, as well as in the reasons for the women’s clinic visits (Table 4.11). There was no significant difference in the proportions of women pregnant in the two surveys in this site (Table 4.11).

4.2.1.2.3. Method of Contraception

4.2.1.2.3.1. Intervention Site

Of the women who were not pregnant, the majority did not respond to the question on the method of family planning that they were using (82 % and 86 % in the pre- and post-intervention surveys respectively). Amongst those who responded, the 3 month injection (Depo provera) was the popular method of contraception in both surveys. A total of four women admitted to not using any contraception at all (Table 4.12).

Table 4.12 Percentages of contraceptive methods used by women in the intervention site.

<table>
<thead>
<tr>
<th>Type of contraception</th>
<th>% Pre-intervention</th>
<th>% Post intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(106)</td>
<td>(150)</td>
</tr>
<tr>
<td>Noristerat</td>
<td>1(0.9)</td>
<td>5(3.3)</td>
</tr>
<tr>
<td>Depo provera</td>
<td>14(13.2)</td>
<td>13(8.7)</td>
</tr>
<tr>
<td>Pill</td>
<td>1(0.9)</td>
<td>2(1.3)</td>
</tr>
<tr>
<td>None</td>
<td>3(2.8)</td>
<td>1(0.7)</td>
</tr>
<tr>
<td>No response</td>
<td>87(82)</td>
<td>129(86)</td>
</tr>
</tbody>
</table>

4.2.1.2.3.2. Control Site

Table 4.13 Percentages of contraceptive methods used by women in the control site.

<table>
<thead>
<tr>
<th>Type of contraception</th>
<th>% Pre-intervention</th>
<th>% Post intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(26)</td>
<td>(51)</td>
</tr>
<tr>
<td>Depo provera</td>
<td>13(50)</td>
<td>2(3.9)</td>
</tr>
<tr>
<td>Noristerat</td>
<td>7(26.9)</td>
<td>1(2.0)</td>
</tr>
<tr>
<td>None</td>
<td>6(23.1)</td>
<td>0(0)</td>
</tr>
<tr>
<td>No response</td>
<td>0(0)</td>
<td>48(94.1)</td>
</tr>
</tbody>
</table>
In the control site, the majority of the women in the post-intervention survey did not respond to the question on family planning (94.1%) whereas all women in the pre-intervention survey responded to this question. 50% of the women in the pre-intervention survey and 3.9% in the post-intervention survey reported using Depo Provera for family planning. Indeed, amongst the women in any group reporting any use of contraception, the most common contraceptive cited was Depo Provera. Use of Noristerat injection was reported by 7 women in the pre-intervention survey and by only 1 woman in the post-intervention survey (Table 4.13).

4.2.2. Health Worker Behaviour reported by users

4.2.2.1. Comparison proportions of users reporting healthcare worker behaviour

At baseline, there were more women in the control site than in the intervention site who reported that healthcare workers had asked them if they drank alcohol, had counselled and offered them family planning; and had given them advice on alcohol and pregnancy (Table 4.14). Of the 7 women in both sites that said they were not using any contraception at all, 5 women had not received any family planning counselling during their consultations.

After the training, there were significantly more women in the intervention site than in the control site (p-value = 0.02) who reported receiving counseling on the fetal adverse effects of alcohol from the healthcare providers (Table 4.14). There were also more women in the intervention site who were counseled and offered family planning as well as given general advice on pregnancy care. There were more women in the control site
who reported being asked if they drank alcohol (Table 4.14). However, this finding was statistically insignificant (p value = 0.08).

There were no significant differences in proportions of the women in the control site reporting the various healthcare worker behaviours pre- and post-intervention (Table 4.14). In the intervention site, there were significantly more women after the training who reported being counselled and offered family planning; as well as given advice on alcohol and pregnancy (Table 4.14). The same variables found to be more common in the intervention group after the training were also the variables found to be different between intervention and control sites.

4.14: Comparison of health worker behaviour reported by women in exit interviews at baseline

<table>
<thead>
<tr>
<th></th>
<th>PRE (%)</th>
<th>POST (%)</th>
<th>#p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>*I (n=120)</td>
<td>*C (n=31)</td>
<td>p-value</td>
<td>*I (n=164)</td>
</tr>
<tr>
<td>Asked if take alcohol</td>
<td>16.7</td>
<td>32.3</td>
<td>0.15</td>
</tr>
<tr>
<td>Family planning counseling</td>
<td>24.2</td>
<td>38.7</td>
<td>0.15</td>
</tr>
<tr>
<td>Family planning offered</td>
<td>20.8</td>
<td>29.0</td>
<td>0.31</td>
</tr>
<tr>
<td>Advice-dos and don’ts during pregnancy</td>
<td>18.3</td>
<td>12.9</td>
<td>0.67</td>
</tr>
<tr>
<td>Advice-effects of maternal alcohol consumption on an unborn baby</td>
<td>23.3</td>
<td>32.3</td>
<td>0.54</td>
</tr>
</tbody>
</table>

*C = Control Site
**I = Intervention Site
#I/C = Comparison of intervention to control, chi squared test
##p-value = Comparison of post to pre in intervention and control sites, chi squared test
4.2.2.2. Assessing time and group as predictors of healthcare worker behaviour

The timegroup interaction variable in Table 4.15 compared the time effect for the control and intervention groups and can be interpreted as reflecting the effect of the training. For the outcome variable “asked if take alcohol”, it was found that the time effects in the intervention and control groups were not significantly different (timegroup p value = 0.50).

Regarding family planning counseling, there was a statistical difference in the time effect between the control and intervention groups (timegroup p value = 0.03). In the intervention site, the women were 30 % more likely to be counseled about family planning after the training than before the training (CI: 1.05 to 1.56).

There was a statistical difference in the training effect between the intervention and control sites regarding the women being offered family planning (timegroup p value = 0.04). The women in the intervention site post-training survey were 10 % more likely to be offered family planning than those in the pre-training survey (Table 4.15).

The training effects for advice on pregnancy care and advice on harmful effects of alcohol in the intervention and control groups were significantly different (Table 4.15). After the training, women in the intervention site were 53 % (95 % CI: 1.19 to 3.82) more likely to be given advice on care of a pregnancy and 2.13 times as likely to be advised on the harmful effects of alcohol consumed during pregnancy on the fetus (95 % CI: 1.27 to 3.53). In addition, they were more likely to be given general advice on pregnancy care (OR=1.53; 95 % CI=1.19 to 3.82) and more likely to be counseled (OR=1.3; 95 %
Chapter 4: Results

CI=1.05 to 1.56) on and offered (OR=1.1; 95 % CI=1.06 to 2.10) family planning. Taking account of the controls through an interaction variable for group-time effects, there was a significant positive impact on family planning counseling (OR=1.24; 95 % CI=1.11 to 3.77), offer of family planning (OR=2.54; 95 % CI=1.69 to 9.31), pregnancy advice (OR=2.89; 95 % CI=1.27 to 11.88) and pregnancy advice specific to alcohol consumption (OR=5.07; 95 % CI=1.37 to 6.96).

Table 4.15: Comparison of health worker behavior reported by women pre- and post-intervention

<table>
<thead>
<tr>
<th></th>
<th>Odds ratio</th>
<th>P value</th>
<th>95 % Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asked if take alcohol</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post versus pre in control group</td>
<td>0.49</td>
<td>0.16</td>
<td>0.18 – 1.34</td>
</tr>
<tr>
<td>Post versus pre in intervention group</td>
<td>0.42</td>
<td>0.20</td>
<td>0.32 – 1.21</td>
</tr>
<tr>
<td>*Timegroup interaction</td>
<td>1.15</td>
<td>0.50</td>
<td>0.17 – 1.03</td>
</tr>
<tr>
<td><strong>Family planning counseling</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post versus pre in control group</td>
<td>0.56</td>
<td>0.17</td>
<td>0.34 – 1.93</td>
</tr>
<tr>
<td>Post versus pre in intervention group</td>
<td>1.30</td>
<td><strong>0.04</strong></td>
<td>1.05 – 1.56</td>
</tr>
<tr>
<td>*Timegroup interaction</td>
<td>1.24</td>
<td><strong>0.03</strong></td>
<td>1.11 – 3.77</td>
</tr>
<tr>
<td><strong>Family planning offered</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post versus pre in control group</td>
<td>0.58</td>
<td>0.37</td>
<td>0.34 – 1.99</td>
</tr>
<tr>
<td>Post versus pre in intervention group</td>
<td>1.10</td>
<td><strong>0.02</strong></td>
<td>1.06 – 2.10</td>
</tr>
<tr>
<td>*Timegroup interaction</td>
<td>2.54</td>
<td><strong>0.04</strong></td>
<td>1.69 – 9.31</td>
</tr>
<tr>
<td><strong>Advice-dos and don’ts during pregnancy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time effect in control group</td>
<td>1.03</td>
<td>0.10</td>
<td>0.04 – 1.35</td>
</tr>
<tr>
<td>Time effect in intervention group</td>
<td>1.53</td>
<td><strong>0.01</strong></td>
<td>1.19 – 3.82</td>
</tr>
<tr>
<td>*Timegroup interaction</td>
<td>2.89</td>
<td><strong>0.03</strong></td>
<td>1.27 – 11.88</td>
</tr>
<tr>
<td><strong>Advice-effects of maternal alcohol consumption on an unborn baby</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time effect in control group</td>
<td>0.42</td>
<td>0.09</td>
<td>0.15 – 1.16</td>
</tr>
<tr>
<td>Time effect in intervention group</td>
<td>2.13</td>
<td><strong>0.01</strong></td>
<td>1.27 – 3.53</td>
</tr>
<tr>
<td>*Timegroup interaction</td>
<td>5.07</td>
<td><strong>0.03</strong></td>
<td>1.37 – 6.96</td>
</tr>
</tbody>
</table>

*Group-time interaction variable-taking account of controls
Chapter 4: Results

4.2.2.3. Pregnant versus non-pregnant women pre- and post-intervention in intervention site

The results of the healthcare worker behaviour in the intervention site after the training showed that the proportion of non-pregnant women that were given advice on general pregnancy care in the post-intervention survey was significantly larger (chi sq p value = 0.01) than that in the pre-intervention survey (12.7 % versus 4.7 %). The proportion of non-pregnant women that reported that they had been given advice on the alcohol effects in pregnancy in the post-intervention survey was significantly larger than that in the pre-intervention survey (chi sq p value = 0.04). These findings were similar to those reported by women that were pregnant (Table 4.16). There were more pregnant than non-pregnant women at baseline reporting that they had been asked if they drank alcohol or that they had been given advice on alcohol and pregnancy.

Table 4.16 Comparison of health worker behavior reported by pregnant and non-pregnant women before and after the training in the intervention site.

<table>
<thead>
<tr>
<th>Healthcare worker behavior; n (%)</th>
<th>NOT PREGNANT</th>
<th>PREGNANT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-intervention (n=106)</td>
<td>Post-intervention (n=150)</td>
</tr>
<tr>
<td>- Asked if take alcohol</td>
<td>17 (16)</td>
<td>17 (11.3)</td>
</tr>
<tr>
<td>- General pregnancy Advice</td>
<td>5 (4.7)</td>
<td>19 (12.7)</td>
</tr>
<tr>
<td>- Advice on alcohol and Pregnancy</td>
<td>15 (14.2)</td>
<td>37 (24.7)</td>
</tr>
</tbody>
</table>

*# p value=chi squared comparison, post versus pre*

4.2.2.4. Healthcare worker behavior stratified by purpose of visit

Analysis of baseline healthcare worker behavior, in the intervention and control surveys of both sites combined, showed that of the women that sought primary healthcare
services not related to maternal and child health, 71.2 % had not been counseled for family planning and 90 % of this proportion had not been asked if they drank alcohol. There was no association found between being counseled for family planning and being asked if one drank alcohol (chi square p value = 0.01).

4.2.2.4.1. Comparison of pre- versus post intervention healthcare worker behavior stratified by purpose of clinic visit in the intervention site

4.2.2.4.1.2. Asked if they drank alcohol

Table 4.17: Alcohol screening amongst women in the intervention site (pre- versus post-intervention)

<table>
<thead>
<tr>
<th>Purpose of visit</th>
<th>*Odds Ratio</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family planning</td>
<td>1.18</td>
<td>1.07 – 3.76</td>
</tr>
<tr>
<td>Antenatal care</td>
<td>2.56</td>
<td>1.73 – 8.90</td>
</tr>
<tr>
<td>Well baby clinic</td>
<td>0.61</td>
<td>0.28 – 1.33</td>
</tr>
<tr>
<td>Other primary care services</td>
<td>1.24</td>
<td>1.08 – 2.67</td>
</tr>
</tbody>
</table>

*Comparing pre- to post intervention

Analysis of the healthcare worker behavior in the intervention site showed that women that went for family planning, antenatal care or general primary healthcare services were more likely to be asked if they drank alcohol after the training than before (Table 4.17).

4.2.2.4.1.3. Counseled for family planning

Table 4.18: Family planning counseling amongst women in the intervention site (pre- versus post-intervention)

<table>
<thead>
<tr>
<th>Purpose of visit</th>
<th>*Odds Ratio</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family planning</td>
<td>3.39</td>
<td>1.34 – 8.60</td>
</tr>
<tr>
<td>Antenatal care</td>
<td>0.4</td>
<td>0.02 – 8.4</td>
</tr>
<tr>
<td>Well baby clinic</td>
<td>0.87</td>
<td>0.43 – 1.76</td>
</tr>
<tr>
<td>Other primary care services</td>
<td>1.10</td>
<td>1.02 – 2.20</td>
</tr>
</tbody>
</table>

*Comparing pre- to post intervention

Women that went for family planning to the clinics were more likely to receive family planning counseling (OR = 3.39; CI: 1.34 to 8.60) after the training than before the training. After the intervention, women attending other primary care services were 10 %
more likely to be counseled for family planning than before the intervention (CI: 1.02 to 2.20) (Table 4.18).

4.2.2.4.1.4. Advised on the dangers of alcohol in pregnancy and importance of alcohol abstinence if not on effective contraception

Table 4.19 Advice on alcohol dangers amongst women in the intervention site (pre- versus post-intervention)

<table>
<thead>
<tr>
<th>Purpose of visit</th>
<th>Odd Ratio</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family planning</td>
<td>2.34</td>
<td>0.84 – 6.55</td>
</tr>
<tr>
<td>Antenatal care</td>
<td>1.82</td>
<td>1.61 – 5.43</td>
</tr>
<tr>
<td>Well baby clinic</td>
<td>0.94</td>
<td>0.43 – 1.04</td>
</tr>
<tr>
<td>Other primary care services</td>
<td>0.68</td>
<td>0.30 – 0.96</td>
</tr>
</tbody>
</table>

*Comparing pre- to post intervention

Women attending antenatal care services were more likely to be given advice on alcohol and pregnancy after the training than before the training (OR = 1.82; CI: 1.61 to 5.43) (Table 4.19).
Table 4.11: Characteristics of the Interviewees

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>PRE</th>
<th>POST</th>
<th>#</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>**I(120)</td>
<td>*C(31)</td>
<td>Pvalue</td>
<td>Total</td>
</tr>
<tr>
<td>Age, mean yrs (sd)</td>
<td>28.6 (7.4)</td>
<td>29.5 (7.2)</td>
<td>0.55</td>
<td>28.8 (7.3)</td>
</tr>
<tr>
<td>Visit purpose n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family planning</td>
<td>10(8.3)</td>
<td>1(3.2)</td>
<td>0.47</td>
<td>11(7.3)</td>
</tr>
<tr>
<td>Antenatal care</td>
<td>10(8.3)</td>
<td>3(9.7)</td>
<td>0.75</td>
<td>13(8.6)</td>
</tr>
<tr>
<td>Well baby clinic</td>
<td>46(38.3)</td>
<td>13(41.9)</td>
<td>0.74</td>
<td>59(39.1)</td>
</tr>
<tr>
<td>Primary healthcare</td>
<td>52(43.3)</td>
<td>14(45.2)</td>
<td>0.86</td>
<td>66(43.7)</td>
</tr>
<tr>
<td>Pregnant n(%)</td>
<td>12(10.0)</td>
<td>5(16.1)</td>
<td>0.50</td>
<td>17(11.3)</td>
</tr>
</tbody>
</table>

*C = Control Site
**I = Intervention Site
#I/C = Comparison of intervention to control, chi squared test
##p-value = Comparison of post to pre in control and intervention sites, chi squared test
CHAPTER 5
DISCUSSION

A woman with an alcohol-exposed pregnancy (AEP) risks having a baby born with Fetal Alcohol Syndrome (FAS). FAS is irreversible and so once the damage is caused, it is for life. This syndrome is totally preventable and at a cost far less than that required for remedial medical, educational and social costs once the damage is done.

The results from this research support the argument that a short training intervention does improve service provider practices as regards to prevention of AEPs. It is important that service providers know how to prevent and manage women with or at risk of alcohol exposed-pregnancies.

5.1 Service Provider Results
One of our objectives was to identify service providers dealing with women with or at risk of alcohol-exposed pregnancies. We found that in addition to healthcare workers, there is non-healthcare staff such as home based caregivers and counselors that attend to women with or at risk of alcohol exposed pregnancies.

There were much more female than male service providers. This finding is typical of the profile found among service providers in the health sector.
In terms of their practice history, service providers were more likely to report managing a woman at risk of AEP (77% overall) than they were to report identifying (i.e. screening) a woman at risk to AEP (7% overall). This indicates that service providers less commonly screen women for alcohol but once one is identified as a drinker, they get involved. In addition, there were differences between the May and July/August training groups in that there were significantly more service providers that had ever managed a woman with or at risk of an alcohol-exposed pregnancy in the July/August training than in the May training (87% versus 54%, chi p value < 0.001); further, only 10% of those trained in July/August had ever identified a woman with or at risk of an alcohol-exposed pregnancy while none of those trained in May had ever identified such a woman. An explanation for the differences between the groups could be because women with such problems rarely seek help from non-healthcare centers. It could also be that the May trainees were less aware of the dangers of alcohol consumption during pregnancy. The service providers trained in May were mostly staff from social services and from NGOs while those trained in July/August were all healthcare workers. However, since social workers also attend to women with alcohol problems, it is important that they too get equipped with the necessary skills to identify and manage such women.

The types of services available for women with or at risk of alcohol-exposed pregnancies reported by the training participants were mainly counseling, education, referral and support for such women. At least 30% of participants in both May and July/August trainings reported lacking these services available at their facilities. There were different reasons given for the non-availability of the services but one that was common to both
trainings was the lack of skilled staff. The lack of human resource in the West Coast is a problem the Department of Health is aware of and is working at correcting it. Furthermore, service providers highlighted the fact that even though they may find a woman to be at risk of an alcohol-exposed pregnancy, they have no idea of where to refer such a woman. These, compounded with their lack of time to manage such a woman, results in no help rendered to these women at all. This reinforces the argument of Floyd and colleagues (2006) who say that if we are to achieve prevention of Fetal Alcohol Spectrum Disorders (FASD), there is need to have informed and educated healthcare providers. These, if empowered with the necessary tools, are capable of managing women with or at risk of alcohol-exposed pregnancies even in the midst of the scarce manpower.

The study also set out to determine the knowledge of service providers regarding prevention of FAS through prevention of alcohol-exposed pregnancies so as to evaluate the effectiveness of a specially designed training program. In terms of alcohol causing harm to an unborn baby, the proportions of participants stating alcohol as a cause of harm was very high in both groups (96 % and 95 % respectively) and these increased even further after the trainings, with the overall increase being significant (95 % to 100 %; p-value = 0.04). This finding was contrary to the findings regarding smoking as a cause of harm where fewer service providers stated smoking as being harmful to the fetus after the training though these declines were not statistically significant (p values 0.14 and 0.66 respectively). These training sessions only focused on harmful effects of alcohol consumption by pregnant mothers and this may have lead to respondents “forgetting”
about harmful effects of smoking, and hence a lower reported prevalence. Although the differences were statistically insignificant, it may point to problems with a vertical focus on alcohol alone. Training that focuses on all possible harmful causes to the fetus would probably be less likely to shift the mindsets of participants away from causes of harm other than alcohol.

The study sought to explore what the participants thought was the cause for FAS specifically. Probably due to the high prevalence of FAS in the study area, almost all service providers knew that it was alcohol that caused it. However, in examining the specific risk from alcohol consumed during pregnancy, in both May and July/August trainings, the proportions of participants stating specifically that it is the alcohol consumed during pregnancy that causes FAS increased after the trainings. The increase in the July/August training was significant (p value < 0.001) while that in May was not (p value = 0.06). This suggests that it is important for trainers to be very specific about the risk of FAS associated with alcohol consumption during pregnancy.

The service providers’ reported confidence at managing women with or at risk of alcohol-exposed pregnancies increased after the trainings including confidence regarding identifying a woman with or at risk of an alcohol-exposed pregnancy, knowing where to refer such a woman, screening for alcohol in every woman of reproductive age attended to and also emphasizing the importance of alcohol abstinence if not using contraception or vice versa or both. The differences in the median scores before and after the trainings were statistically significant in both trained groups (p values < 0.001 for both). These
results on the levels of confidence show that even though the service providers in this area had some knowledge of FAS (due to the high prevalence), they were previously not confident at FAS prevention through identification and management of women with or at risk of alcohol-exposed pregnancies. The trainings appeared to give them confidence to manage such cases. This is confirmed by similar difference in confidence levels found in comparing trained service providers to controls. Controls had similar median confidence score to intervention respondents at baseline. However, a comparison of trained service providers to controls showed higher confidence scores among the trained providers.

It is true that the cross sectional nature of the comparison to the control group could have resulted in bias. However, service providers in the control site were similar in age and gender distribution as well type of work in involved they were involved. Also, having some open-ended questions in the questionnaire reduced the number of possible leading questions which could also result in information bias.

There is no published literature specific to short training intervention for pre-conception prevention of alcohol exposed pregnancy. Therefore, a comparison of the results obtained from this study with existing literature has not been possible. Existing literature relating to FAS prevention through service provider training has been mainly in the arena of affected children (Elgen et al, 2007) and in identifying pregnant women (Chang, 2001) who are at risk of bearing children with FAS, a prevention end-point much later in the pathway to FAS than targeted by this study. The results obtained in this study, although
only focused on prevention of AEPs in non-pregnant women, are consistent with those found by Elgen’s group (2007) and Chang (2001).

In this study, post-intervention assessment was done immediately after the training. As a result, the assessment did not cater for retention of the knowledge acquired during the training. This can hinder sustainability should a policy in this regard be implemented because it is not easy to ascertain for how long the knowledge gained can be retained. In this regard, a longer follow up would be helpful and therefore recommended.

Almost half of the service providers trained in July/August (43 %) reported poor referral structure as a reason for the lack of services for women with or at risk of AEPs. This proportion is large enough to warrant concern and precipitates the need for revision of existing guidelines (or created if none exist) for management of women with such problems.

In summary, participants in the training reported greater confidence about identifying and managing women at risk of alcohol exposed pregnancies. There was increased knowledge on screening for alcohol in any woman of reproductive age attended to. The effects of the training were similar for both May and July/August groups although not quite significant for the former group. This could be due to the small sample size for this group. It may also be that the participants in this group were not from a health science background and so grasping the concepts of the training was not as easy as for the other group. Nonetheless, the consistently positive finding in both groups is encouraging.
5.2 Service User Results

At baseline, the populations of women in the control and intervention sites were comparable in terms of age and the purpose for the clinic visit. The majority of the women had gone seeking primary healthcare services other than those pertaining to maternal and child health. This is as expected because people are more likely to seek healthcare services when unwell rather than for preventive purposes.

Regarding healthcare worker behavior, it was noted that the intervention group had lower reported actions at baseline compared to controls, but increased more than the control group after the training. For some actions, the effects among the controls went down after the training.

The findings demonstrated strong positive effects from the training. Users in the intervention site were more likely to be counseled and offered family planning; and given advice on pregnancy and alcohol compared to controls (Table 4.15). Further, the findings are consistent with the results of the service provider evaluation indicating improved confidence in screening and other management skills. Specifically, in the intervention site, women in the post-intervention survey were 2.13 times more likely to have been given alcohol advice than those in the pre intervention survey (CI: 1.27 to 3.53) and more likely to be given general advice on pregnancy care (OR=1.53; CI=1.19 to 3.82). They were also more likely to be counseled (OR=1.3; CI=1.05 to 1.56) on and offered (OR=1.1; CI=1.06 to 2.10) family planning. Analysis of the time-group interaction variables in a logistic regression model taking account of the controls confirmed that
these effects were related to the effect of the training. These results reflect positive outcomes of the training.

A comparison of results in the control and intervention sites showed that there was very low reporting of use of family planning in the latter site both pre and post intervention (Table 4.12). This low reporting was also noted in the post-intervention survey of the control site (Table 4.13). However, in the pre-intervention survey, all women responded to the question on family planning. Generally, there was low response rate to the question on use of family planning among the study participants. This may be due to interviewees refusing to answer this question or due to interviewers not asking the question. The latter is unlikely to be the case as all interviewers were adequately trained prior to the onset of the data collection. This bias in the information obtained from the interviewees could bias the results towards the null and therefore underestimate the effect of the training intervention.

Overall results stratified by pregnancy state show that larger proportions of pregnant than non pregnant women had been asked if they drank alcohol and also as given advice on alcohol and pregnancy. These results were significant and are to be expected. However, even analysis of the results obtained for non-pregnant women before and after the training show significant increases in the proportions of these women reporting being given advice on alcohol and pregnancy (Table 4.16). This means that the benefit of the training applies to both pregnant and non-pregnant women even if there are higher rates of the reported actions among pregnant women.
Amongst the few women who admitted to not using any contraception, they neither received counselling nor were offered any family planning during the consultation. This finding is a source of concern since Day and his colleagues (2002) found that ineffective or no contraception at all in a fertile woman taking alcohol is a recipe for an AEP. These fertile non-pregnant women should actually be the primary target if we are to prevent AEPs.

Independent of any training, the purpose of the clinic visit played a role in the behavior of the healthcare workers in the intervention site. Results show that for all visit reasons (except for taking a baby to the well baby clinic), women were more likely to be screened for alcohol as well as offered some advice on alcohol and pregnancy when they sought healthcare services (Table 4.18). Screening for alcohol was less in the women that took their babies to the well baby clinics probably because these women were not the primary focus at these particular clinic visits.

Therefore, contrary to Chang (2001) who supports only the idea of screening pregnant women for alcohol consumption, it appears appropriate to advocate for alcohol screening in all women of reproductive age that seek any healthcare services. Screening a pregnant woman for alcohol may already be too late as the damage would have been done already by the time one learns they are pregnant. Although the pre- and post-intervention analysis results show that pregnant women had a higher likelihood of being asked if they drank alcohol and to be given advice on dangers of alcohol consumption during pregnancy, all women of reproductive age should be screened.
During the routine primary healthcare services, screening for women at risk of having AEPs is a step towards achieving substantial reduction in the incidence of AEPs. The baseline survey showed that only a small percentage of the women that sought primary healthcare services reported being asked if they drank alcohol (16.7 %). The majority had not been asked and therefore identification of these women as being at risk could possibly have been missed.

Analyzing the health worker behavior at baseline in the different strata of the clinic visits (Table 4.17) showed that the majority of the women seeking ordinary primary healthcare services are not screened for alcohol (78.8 %) and a good proportion did not receive counseling on contraception (71.2 %). This corroborates the earlier findings in the results stratified by pregnancy state that healthcare workers only come to think about FAS and its implications once they have a pregnant woman in front of them. By this time probably, the fetus would have already been exposed to alcohol. The aim should be to identify women at risk of alcohol exposed pregnancies and not to only focus on women that are already pregnant.

In the exit interview surveys, the target population was women of reproductive age (18 to 45 years). The minimum age selected was 18 years notwithstanding the fact that girls younger than this age are also at risk. This limits the generalisability of the study to adolescents. However, this age cut-off was chosen for practical purposes as it the minimum age at which one can give independent consent. Despite the fact that younger women are an important at risk group, this study has helped to identify some of the
challenges and opportunities for training interventions that can benefit female populations. However, further studies may be necessary to determine the presence and extent of benefits for younger target groups.

5.3 Limitations and Recommendations

One of the challenges encountered in the undertaking of this study was the consequence of problems in the logistics for the study design employed. The shortage of staff in the study site made it difficult to have training at the desired time. This resulted in the delay of the data collection. A possible explanation for the difficulties encountered is that FAS, despite being so prevalent, is not given as much attention as HIV/AIDS. This could explain the initial reluctance in the participants to attend the trainings and also from the Department of Health to put this training as one of the top priority activities on the year planner.

The structure of the training course is another possible source of weakness in this study. The two trainings in May and in July/August comprised different populations and were conducted by different trainers. However, the results from both groups showed a positive effect of the training. In as much as this inconsistency was a limitation to this study, it was also strength because it showed that training could be adapted to real-life needs of the services and still produce effective intervention.

Another limitation of the study lies in the fact that the service provider sub study is a before-after study and so confounding is hard to rule out. This is a threat to the internal validity of the results. Also, it is difficult to fully establish causation since the investigator
does not have full control over the variables. Analyzing data collected from control service providers as a cross section only compared to the before-after study design in the intervention site, could be a source of potential bias. A randomized controlled trial (RCT) would have been ideal for this study in order to bring out the evidence for this kind of medical research. This study design was not undertaken as it is a very demanding design in terms of resources and the budget set for our study was not adequate to undertake an RCT. Also, if an RCT was employed, it would not have been possible to blind the intervention and therefore increasing the possibility of bias in the study. Moreover, the feasibility of undertaking an RCT in a health service setting is always difficult because health service managers are obliged to keep service delivery a priority. The controlled trial for the service user sub study was a strength of this study in the absence of conducting an RCT with service providers.

In the service user surveys, there was low reporting as regards to use of family planning. This was a limitation in that it would have been important to know the total number of women not using family planning methods and from these how many were screened for alcohol or given any advice on alcohol consumption during pregnancy.

The results from this study are applicable more widely because the training was done in an area with high FAS prevalence and because it was offered also to non-healthcare staff. The service provider results would have been even more significant if the participants had been trained by the same people and for the same duration. In addition, post-intervention assessment was done immediately after the training. Arrangements for a booster training session with the healthcare staff were planned for three months after the
training but this failed due to lack of staff in the study area. This was meant to assess service providers’ retention of knowledge. Therefore, the assessment did not cater for retention of the knowledge acquired during the training. This can hinder sustainability should a policy in this regard be implemented. A recommendation for future trainings with workers in an understaffed setting would be in-service training.

This intervention will be sustainable provided the importance of such an intervention is well understood by the national policy makers. It is only with the support of the health authorities, taking a conscious and deliberate effort in terms of in-service training, that this intervention would be a success resulting not only in the reduction of AEP incidences but the downstream FAS effects. On the contrary, the scarce staff especially in the health sector poses a challenge to the success of such an intervention. A solution to this would be on-site in-service training where a trainer goes to the different healthcare centers and conducts short and refresher training sessions.

The sample size for the service users was larger than was initially calculated. The estimated sample size was 200 while 375 women were actually interviewed in the study. The actual sampling in the field was not as easy as expected so it is possible that overcompensation for this problem explained some of the oversampling. In the end, some of the estimates used for the initial sample size estimation were not born out in the field results. It was assumed that service providers have 20 % level of knowledge on FAS and practice directed at its prevention before they underwent training and it was expected that after the training this should increase to 60 %. It was also assumed that normally 40 % of
the total women attending the clinics are screened for alcohol. This proportion was expected to increase to 70 % after the service providers had undergone the training. In fact, we found that after the training, the service provider knowledge on FAS prevention was already very high (in the region of 90%) and increased to 100 %. So, the increased sampling from the population was helpful to enable us to achieve the intended power of 80 %.

5.4 Conclusion
This is the first study to evaluate effectiveness of training to address prevention of alcohol exposed pregnancies. The results show that after the trainings, service providers became more confident at screening for women at risk of alcohol exposed pregnancies as well as managing such women. This finding is corroborated by the results of the service user surveys which show a positive impact of training on users reporting that they had been asked they drank alcohol (more women screened for alcohol in post-intervention surveys compared to pre-intervention surveys). The results of this study suggest that a short training course given to service providers appears effective in building their capacity to better prevent and/or manage women with or at risk of alcohol exposed pregnancies. When conducting such training, there is need to address all possible causes of harm to a fetus so as not to shift the participants’ attention from causes of fetal harm other than alcohol.
In terms of policy implementation, the study suggests that alcohol screening should be conducted in every woman of reproductive age seeking any services from the health or social facilities as national policy.

5.5 Further Research

Research gaps remain in the field of FAS prevention making further exploration imperative. An example would be to explore the possibility of health promotion activities in all primary health care settings. This would enable women in the waiting queues at the clinics gain some knowledge on alcohol consumption and its dangers. It would also ensure sustainability of the prevention program regarding alcohol exposed pregnancies. It would also be important to integrate motivational intervention for alcohol abuse to that for other problems for example sexually transmitted infections.

Further research not related directly to prevention of AEPs and FAS would be to target school children to educate them on FAS causes and prevention before they become sexually active. This can be incorporated into already existing primary school curricula which cover sex education. Therefore, training of educators on FAS causes and prevention would be beneficial when they impart it to the learners and consequently reduce FAS incidence. In addition to this, vigorous community awareness to educate people on FAS would help reduce the incidence.
APPENDIX A

TRAINING PROGRAMME OUTLINE

DAY 1

• Registration
• Introductions and expectations
• Foetal Alcohol Syndrome
• Personal attitudes to addiction
• Understanding addiction
• Drugs and their effects
• Evaluation

DAY 2

• Registration and recap
• Contraception
• Families and Drugs
• Screening tools
• Skills Training
• Resources and referral
• Evaluation
APPENDIX B

An Icebreaker for expectations: The Pig Exercise

Ask participants to draw a pig. (3 minutes)

Analyse the pig as follows:

If the pig is drawn at the top of the page – you are positive and optimistic

At the bottom of the page – pessimistic and negative

In the middle of the page – realistic

If the pig faces forward – you are direct, enjoy playing devil’s advocate

Faces left - believe in tradition

Faces right - innovative, active with little sense of family.

If the pig has 4 legs showing – you are secure and strong-willed

Less than 4 legs showing – insecure, period of major change

More than 4 legs showing – plain stupid

If the pig has too many details – you are analytic and detailed

Too little detail - emotional and care little for detail, risk-taker

Size of ears indicate whether you are a good listener, bigger is better

Length of tail indicates quality of sex life
APPENDIX C

Substance Screening Tools

CAGE

1. Have you ever felt you should cut down, on your drinking?
2. Have people annoyed you by criticizing your drinking?
3. Have you ever felt bad or guilty about your drinking?
4. Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (eye opener)?

Scoring: Item responses on the CAGE are scored 0 for "no" and 1 for "yes" answers, with a higher score an indication of alcohol problems. A total score of 2 or greater is considered clinically significant.

The normal cutoff for the CAGE is two positive answers, however, the Consensus Panel recommends that the primary care clinicians lower the threshold to one positive answer to cast a wider net and identify more patients who may have substance abuse disorders. A number of other screening tools are available.

CAGE Questions Adapted to Include Drugs (CAGE-AID)

1. Have you ever felt you ought to cut down on your drinking or drug use?
2. Have people annoyed you by criticizing your drinking or drug use?
3. Have you felt bad or guilty about your drinking or drug use?
4. Have you ever had a drink or used drugs first thing in the morning to steady your nerves or to get rid of a hangover (eye-opener)?

APPENDIX D

SERVICE PROVIDER QUESTIONNAIRE

1. Today’s Date □□ □□ □□□□
   DD  MM  YYYY

2. Subject □□□□□□ Sex □ □
   Number M  F

3. Date of birth □□ □□ □□□□
   DD  MM  YYYY

4. Occupation:
   (a) Nurse
   (b) Doctor
   (c) Social worker
   (d) Other specify___________

5. For how long have you been working as above?
   (a) Less than 6 months
   (b) 6 months to 1 year
   (c) 1 year to 5 years
   (d) 6 years +

6. For how long have you been working at current institution?
   (a) Less than 6 months
   (b) 6 months to 1 year
   (c) 1 year to 5 years
   (d) 6 years +

7. If answer to Q.4 is (a) or (b), what is/are your area/areas of work? (Can circle >1 answer)
   (a) Antenatal care
   (b) Family planning
   (c) Child welfare
   (d) Counselling
   (e) Other, specify___________

8. Which of the following, if done during pregnancy, have harmful effects on an unborn baby?
   (a) Eating red meat
   (b) Smoking
   (c) Exercising
   (d) Drinking alcohol
   (e) Eating fruits and vegetables.
9. Have you ever heard of Foetal Alcohol Syndrome (FAS)?  YES / NO
   If YES to Q.9, answer Qs 10-13
10. What causes FAS?

   ______________________________________________________

11. Can FAS be prevented?  YES / NO

12. If YES to Q.13, how is FAS prevented?

   ______________________________________________________
   ______________________________________________________

13. Have you ever treated a pregnant woman with or at risk of alcohol related problems?  YES / NO

14. If YES to Q. 15, state the nature of intervention. (May choose >1 option)
   (a) Diagnosis
   (b) Counselling
   (c) Awareness alert
   (d) Referral
   (e) Prevention
   (f) Nothing

15. What services can be offered to a woman at risk of an alcohol-exposed pregnancy?

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

16. Are the above services available and accessible at your clinic?  YES / NO

17. If NO to Q. 18, what do you think are the reasons for this?

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

18. How confident do you feel about……… (Scale of 1-4, tick appropriate one)
   (1-very confident, 2-confident, 3-not so confident, 4-not confident at all)

   1  2  3  4
   (a) Being able to diagnose a woman at risk of an alcohol exposed
       pregnancy
   (b) Knowing where to refer such a woman
   (c) Routinely screening every woman you attend to for alcohol use
       alcohol if not on contraception
   (d) Discouraging women of child bearing age from drinking

Thank you for your time.
Please fold this questionnaire in half and drop it in the box provided
APPENDIX E

VRAELYS
Diensverskaffer

1. Datum: □□□□□□
   DD MM JJ JJ

2. Vraelys nommer: □□□□□□□□
   Geslag: □ □
   M F

3. Geboortedatum: □□□□□□□□
   DD MM JJ JJ JJ

(Omsirkel asseblief slegs 1)

4. Beroep:
   (e) Verpleegkundige
   (f) Dokter
   (g) Maatskaplikewerker
   (h) Ander, Spesifiseer ___________

5. Hoe lank beoefen u al hierdie beroep?
   (a) Minder as 6 maande
   (b) 6 maande tot 1 jaar
   (c) 1 jaar tot 5 jaar
   (d) 6 Jaar +

6. Dui asseblief die tydperk aan wat u bogenoemde beroep beoefen
   (a) Minder as 6 maande
   (b) 6 maande tot 1 jaar
   (c) 1 jaar tot 5 jaar
   (d) 6 Jaar +

7. Indien u ‘n verpleegkundige of geneesheer is in watter van die volgende areas werk u? (Omsirkel slegs een)
   (a) Voorgeboortesorg
   (b) Gesinsbeplanning
   (c) Kinderwelsyn
   (d) Berading
   (e) Ander, Spesifiseer ___________

8. Watter van die volgende kan nadelige gevolge he op die ongebore baba, indien ‘n vrou dit doen gedurende swangerskap?
   (a) Die eet van rooi vleis
(b) Rook van sigarette
(c) Oefening
(d) Alkohol gebruik
(e) Eet van groente en vrugte.

9. Het u al ooit gehoor van Fetale Alkohol Sindroom (FAS)
Indien “JA” antwoord asseblief die volgende vrae (Vraag 10
11 en 12)

10. Wat veroorsaak FAS?

________________________________________________________________________

11. Kan FAS voorkom word? JA / NEE

12. Indien “JA” Hoe kan FAS voorkom word?

________________________________________________________________________

13. Het u al ooit ‘n swanger vrou behandel met alkohol probleme
of met moontlike alkohol probleme?
JA/NEE

14. Indien “JA”, watter van die volgende intervensies het u
Gedoen?

(a) Diagnose
(b) Berading
(c) Bewusmaking van gevare
(d) Verwysing
(e) Voorkoming
(f) Geen

15. Watter dienste kan aangebied word aan vroue met ‘n moontlik
alkohol blootgestelde swangerskap?

________________________________________________________________________

________________________________________________________________________

16. Is bogenoemde dienste beskikbaar en toeganklik by u kliniek?
JA/NEE

17. Indien Nee, wat dink u is die rede daarvoor?

________________________________________________________________________

________________________________________________________________________

88
   (1- baie seker, 2- seker, 3 -nie so seker, 4 -glad nie seker)

18.1 Om te kan identifiseer of ‘n vrou risiko is om ‘n alkohol blootgestelde swangerskap te kan he

   □□□□
   1  2  3  4

18.2 Die kennis om sodanige vrou te verwys

   □□□□
   1  2  3  4

18.3 Roetine sifting van elke vrou vir alkohol gebruik/misbruik

   □□□□
   1  2  3  4

18.4 Om vroue wat nog moontlik swanger kan raak te ontmoedig om te drink, indien hulle nie op ‘n voorbehoedmiddel is nie.

   □□□□
   1  2  3  4

Dankie vir u tyd
Vou asseblief die vraelys in twee en plaas dit in die kartonhouer wat voorsien word.
APPENDIX F

SERVICE PROVIDER QUESTIONNAIRE CODING SCHEMA

1. Today’s Date  □□ □□ □□□□
   DD  MM  YYYY

2. Subject □□□□           Sex □ □
   Number 0 = M; 1 = F

3. Date of birth □□ □□ □□□□
   DD  MM  YYYY

4. Occupation:
   ( ) Nurse
   (a) Social worker
   (b) Home based carer
   (c) Community worker

5. For how long have you been working as above?
   0-Less than 6 months
   1- 6 months to 1 year
   2- 1 year to 5 years
   3- 6 years +

6. For how long have you been working at current institution?
   0-Less than 6 months
   1- 6 months to 1 year
   2- 1 year to 5 years
   3- 6 years +

7. If answer to Q.4 is (a) or (b), what is/are your area/areas of work? (Can circle >1 answer)
   0- Antenatal care
   1- Family planning
   2- Child welfare
   3- Counselling
   4- Other, specify___________
   5- More than 1 of the above

8. Which of the following, if done during pregnancy, have harmful effects on an unborn baby?
   0- Eating red meat
   1- Smoking
   2- Exercising
   3- Drinking alcohol
   4- Eating fruits and vegetables.
9. Have you ever heard of Foetal Alcohol Syndrome (FAS)? 0=NO / YES=1
   If YES to Q.9, answer Qs 10-13
10. What causes FAS?
   _______________________________________________________

11. Can FAS be prevented? 0=NO / YES=1

12. If YES to Q.13, how is FAS prevented?
   _______________________________________________________
   _______________________________________________________

13. Have you ever treated a pregnant woman with or at risk of alcohol related problems? 0=NO / YES=1

14. If YES to Q. 15, state the nature of intervention. (May choose >1 option)
   0- Diagnosis
   1- Counselling
   2- Awareness alert
   3- Referral
   4- Prevention
   5- More than 1 of these
   6- Nothing

15. What services can be offered to a woman at risk of an alcohol-exposed pregnancy?
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________

16. Are the above services available and accessible at your clinic? 0=NO / YES=1

17. If NO to Q. 18, what do you think are the reasons for this?
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________

18. How confident do you feel about……… (Scale of 1-4, tick appropriate one)
   (1-very confident, 2-confident, 3-not so confident, 4-not confident at all)
   1 2 3 4
   (a) Being able to diagnose a woman at risk of an alcohol exposed pregnancy
   (b) Knowing where to refer such a woman
   (c) Routinely screening every woman you attend to for alcohol use
   (d) Discouraging women of child bearing age from drinking alcohol if not on contraception
APPENDIX G

SERVICE USER QUESTIONNAIRE

1. Today’s Date DD MM YYYY

2. Subject Number

3. Date of birth DD MM YYYY

4. What services did you come to attend? (Can circle >1 answer)
   (a) Family planning
   (b) Antenatal care
   (c) Brought my child to the Well baby clinic
   (d) Other, specify________________________

5. Are you pregnant? YES / NO

6. If YES to Q.5, were you advised to cut down or stop drinking alcohol in pregnancy? YES / NO

7. Were you asked whether or not you take alcohol? YES / NO

8. Were you counselled on the importance of family planning? YES / NO

9. Were you offered any family planning? YES / NO

10. Did the service provider ask you about…? (Can circle >1 answer)
    (a) Family planning i.e. if you are on any family planning
    (d) Dos and don’ts in pregnancy
    (e) Drug and alcohol consumption during pregnancy and the effects
    (f) Other, specify________________________________________

11. Are you taking anything to stop you from becoming pregnant? YES / NO

Thank you for your time.
APPENDIX H

UTIGANGANGS VRAELYS (Kliniek Kliente)

1. Datum: ____/____/____
   DD  MM  JJJJ

2. Vraelys: ____/____/____
   Nommer:

3. Geboortedatum: ____/____/____

4. Watter dienste het u vandag van gebruik gemaak by die kliniek?
   (Sirkel asseblief siegs een antwoord)
   (a) Gesinsbeplanning (Indien Ja, beantwoord asseblief Vraag 4.1)
   (b) Voorgeboortekliniek
   (c) Kindergesondheidskliniek
   (d) Ander, spesifiseer asb:_____________________________________

   ______________________________________________________

4.2. Verduidelik asseblief hoe u die metode gebruik.
   ______________________________________________________

5. Is u tans swanger? JA / NEE

6. Indien JA op Vraag 5, het u enige advise gekry met betrekking tot die vermindering of geen inname van alcohol gedurende u tydperk van swangerskap? JA / NEE

7. Indien NEE op Vraag 5, is u gevra of u alcohol gebruik of nie? JA / NEE

8. Het u enige berading ontvang met betrekking tot die belangrikheid van gesins beplanning? JA / NEE

9. Is gesinsbeplanning aan u aangebied? JA / NEE

10. Het die persoon wat die diens aan u gelewer het, u gevra oor die volgende?
    (Beantwoord slegs een)
    (a) Gesinsbeplanning (vra slegs indien klient enige van die ander dienste gebruik het)
    (b) Moet en moenie tydens swangerskap.
    (c) Die gebruik van drank en dwelms gedurende swangerskap.
    (d) Ander inligting, spesifiseer_____________________________________

   Dankie vir u tyd
APPENDIX I

SERVICE USER QUESTIONNAIRE CODING SCHEMA

1. Subject □□□□
   Number

2. Date of birth □□ □□ □□□□
   DD MM YYYY

3. What services did you come to attend? (Can circle >1 answer)
   0 - Family planning
   1 - Antenatal care
   2 - Brought my child to the Well baby clinic
   3 - Other, specify___________________

4. Are you pregnant? 1 – YES, 0 - NO

5. If YES to Q.5, were you advised to cut down or stop drinking alcohol in pregnancy? 1 – YES, 0 - NO

   If NO to Q.5,

6. Were you asked whether or not you take alcohol? 1 – YES, 0 - NO

7. Were you counselled on the importance of family planning? 1 – YES, 0 - NO

8. Were you offered any family planning? 1 – YES, 0 - NO

9. Did the service provider ask you about…? (Can circle >1 answer)
   0 - Family planning i.e. if you are on any family planning
   1 - Dos and don’ts in pregnancy
   2 - Drug and alcohol consumption during pregnancy and the effects
   3 - Other, specify_______________________________

10. Are you taking anything to stop you from becoming pregnant? 1 – YES, 0 - NO
APPENDIX J

PARTICIPANT INFORMATION LEAFLET AND INFORMED CONSENT

FOR SERVICE PROVIDERS

STUDY TITLE
Capacity Building of Health Care Providers in the Prevention and Management of Foetal Alcohol Syndrome in the Western Cape

INTRODUCTION
You are invited to undertake training on prevention and management of Foetal Alcohol Syndrome (FAS). This is part of a bigger project on Comprehensive Foetal Alcohol Syndrome Prevention Program in the Western Cape and Gauteng Provinces of South Africa. You will be required to answer questionnaires before and after the training. Before you agree to participate, you should fully understand what is involved. Participation is voluntary and do feel free to ask for any clarifications.

WHAT IS THE PURPOSE OF THIS STUDY?
The main purpose of the study is to evaluate the effectiveness of a training intervention on the knowledge and practice of Foetal Alcohol Syndrome and Alcohol Related Birth Defects among health care providers.

WHAT PROCEDURES ARE INVOLVED?
We will ask you to complete a questionnaire today prior to the training and also immediately after receiving the training. After a month, you will again be asked to complete another questionnaire. This will be done at your place of work.
WHAT IS THE DURATION OF THIS STUDY?
The study lasts for up to two months during which time you will receive a total of two days training and answer three questionnaires in total. The trainings will last whole days and will be spaced a week apart to facilitate continuity of service provision at the clinics.

RIGHTS AS A PARTICIPANT IN THIS STUDY

Your participation in this study is entirely voluntary and you can refuse to participate or stop at any time without stating any reason.

WHAT ARE THE RISKS INVOLVED IN THIS STUDY?
The only potential risk involved in this study is the chance that you may feel uncomfortable when answering some of the sensitive questions on service delivery.

WHAT ARE THE BENEFITS INVOLVED IN THIS STUDY?

This training will help you improve your screening skills in the prevention of alcohol exposed pregnancies and also enhance your capacity to manage FAS. It will also help the services to better prevent cases of Foetal Alcohol Syndrome.

SOURCE OF ADDITIONAL INFORMATION

The principal investigator for the overall duration of the study is Ms. Kirstie Rendall-Mkosi. If at any time during the study you have any questions, please do not hesitate to contact her. The telephone number at which she can be reached is (012) 841 3291.

INFORMED CONSENT

I hereby confirm that I have been informed by the investigator, Ms Rendall-Mkosi, or her associate, about the nature, conduct,
benefits and risks of the study. I have also received, read and understood the above written information (Participant Information Leaflet and Informed Consent) regarding the study.

I may, at any stage, without prejudice, withdraw my consent and participation in the study. I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.

Participant's name ____________________________ (Please print)

Participant's signature _______________ Date __________

Investigator's name ____________________________
(Please print)

Investigator's signature _______________ Date __________

I, Ms Kirstie Rendall-Mkosi/Delegate, herewith confirm that the above participant has been informed fully about the nature, conduct and risks of the above study.

Witness's name* _______________ (Please print)
*Consent procedure should be witnessed whenever possible.

Witness's signature _______________ Date __________
APPENDIX K

PARTICIPANT INFORMATION LEAFLET AND INFORMED CONSENT

FOR SERVICE PROVIDERS

(CONTROL GROUP)

STUDY TITLE
Capacity Building of Health Care Providers in the Prevention and Management of Foetal Alcohol Syndrome in the Western Cape

INTRODUCTION
You are invited to undertake training on prevention and management of Foetal Alcohol Syndrome (FAS). This is part of a bigger project on Comprehensive Foetal Alcohol Syndrome Prevention Program in the Western Cape and Gauteng Provinces of South Africa. You will be required to answer questionnaires before and after the training. However, being in the control group, you will not receive the training immediately after answering the questionnaire but at a later stage. Before you agree to participate, you should fully understand what is involved. Participation is voluntary and do feel free to ask for any clarifications.

WHAT IS THE PURPOSE OF THIS STUDY?
The main purpose of the study is to evaluate the effectiveness of a training intervention on the knowledge and practice of Foetal Alcohol Syndrome and Alcohol Related Birth Defects among health care providers.

WHAT PROCEDURES ARE INVOLVED?
We will ask you to complete a questionnaire today prior to the training and also immediately after receiving the training. After
a month, you will again be asked to complete another questionnaire. This will be done at your place of work.

WHAT IS THE DURATION OF THIS STUDY?
The study lasts for up to two months during which time you will receive a total of two days training and answer three questionnaires in total. The trainings will last whole days and will be spaced a week apart to facilitate continuity of service provision at the clinics.

RIGHTS AS A PARTICIPANT IN THIS STUDY
Your participation in this study is entirely voluntary and you can refuse to participate or stop at any time without stating any reason.

WHAT ARE THE RISKS INVOLVED IN THIS STUDY?
The only potential risk involved in this study is the chance that you may feel uncomfortable when answering some of the sensitive questions on service delivery.

WHAT ARE THE BENEFITS INVOLVED IN THIS STUDY?
This training will help you improve your screening skills in the prevention of alcohol exposed pregnancies and also enhance your capacity to manage FAS. It will also help the services to better prevent cases of Foetal Alcohol Syndrome.

SOURCE OF ADDITIONAL INFORMATION
The principal investigator for the overall duration of the study is Ms. Kirstie Rendall-Mkosi. If at any time during the study you have any questions, please do not hesitate to contact her. The telephone number at which she can be reached is (012) 841 3291.
INFORMED CONSENT

I hereby confirm that I have been informed by the investigator, Ms Rendall-Mkosi, or her associate, about the nature, conduct, benefits and risks of the study. I have also received, read and understood the above written information (Participant Information Leaflet and Informed Consent) regarding the study.

I may, at any stage, without prejudice, withdraw my consent and participation in the study. I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.

Participant's name __________________________ (Please print)
Participant's signature __________________________ Date __________
Investigator's name __________________________ (Please print)
Investigator's signature __________________________ Date __________

I, Ms Kirstie Rendall-Mkosi/Delegate, herewith confirm that the above participant has been informed fully about the nature, conduct and risks of the above study.

Witness's name* __________________________
(Please print)

*Consent procedure should be witnessed whenever possible.

Witness's signature __________________________ Date __________
APPENDIX L

PARTICIPANT INFORMATION LEAFLET AND INFORMED CONSENT FOR SERVICE USERS

STUDY TITLE
Capacity Building of Health Care Providers in the Prevention and Management of Foetal Alcohol Syndrome in the Western Cape

INTRODUCTION
I would like to invite you to participate in a research project to reduce the number of children born with foetal alcohol syndrome in the Western Cape Province. I would like to ask you some questions about the services you have just received at the clinic because we are trying to improve the knowledge and practice of health care providers in the clinics and have/will be running training for the providers. Your responses will help us determine if our training is effective. Before you agree to take part in this study you should fully understand what is involved. You should not agree to take part unless you are completely happy about all the procedures involved.

WHAT WILL HAPPEN IN THIS STUDY?
If you agree to participate, I will ask you a few questions about the service you attended and what the nurse/providers asked you during the consultation. The interviews will take place in private. Your responses will be written down without your name or address. The questionnaires will all be stored in a locked filing cabinet in the FAS project office at the University of Cape Town when not in use and will only be available to research team members. The information you give me will be treated as confidential. This means that no-one other than the researchers will have access to the information. When we report the results of the study, there will be no information that identifies the
individuals who participated in the study. What you tell me will remain between you and me and will not influence the kind of care you receive from the clinic now or in future. The interview should not last more than five minutes.

**WHAT ARE MY RIGHTS AS A PARTICIPANT IN THIS STUDY?**

Your participation in this study is entirely voluntary and you can refuse to participate or stop at any time without stating any reason.

**WHAT ARE THE BENEFITS INVOLVED IN THIS STUDY?**

This study will tell us if the training we provide to the staff is improving their knowledge and skills. In the long-term, we hope this will help us reduce the number of children born with Foetal Alcohol Syndrome (FAS) and Alcohol Related Birth Defects.

**INFORMED CONSENT**

I hereby confirm that I have been informed by the investigator, Ms Rendall-Mkosi, or her associate, about the nature, conduct, benefits and risks of the study. I have also understood the above information regarding the study.

I am aware that the results of the study, including my age and date of birth, will be anonymously processed into a study report.

I may, at any stage, without prejudice, withdraw my consent and participation in the study. I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.

Participant's name ________________ (Please print)

Participant's signature _____________ Date _________
Investigator's name  ________________ (Please print)

Investigator's signature ________________ Date __________

I, Ms Kirstie Rendall-Mkosi/Delegate, herewith confirm that the above participant has been informed fully about the nature, conduct and risks of the above study.

Witness's name*  ________________

(Please print)

*Consent procedure should be witnessed whenever possible.

Witness's signature ________________ Date __________
REFERENCES


Louis, Jonker, KWV chair, quoted in the *KWV Producers Newsletter*, July 1997.


