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MORTALITY AND VIOLENCE IN AGINCOURT, A RURAL AREA OF SOUTH AFRICA

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, in partial fulfilment of the requirements for the degree
of
Master of Science (Med)

Johannesburg, 2009

DECLARATION

I, **Malerato Adelaide Nthamane Mosiane**, declare that this research report is my own work. It is being submitted for the degree of Master of Science in Medicine (Biostatistics and Epidemiology) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

…….

20th Day of April 2009

DEDICATION

I dedicate this work to my beloved husband

Emmanuel Mosiane

ABSTRACT

Violence is a hidden problem in most communities, yet it is among the leading causes of death and non-fatal injury worldwide. It is an essential public health issue for every country and needs to be addressed as a matter of priority. While rural areas of South Africa are believed to be safer than urban areas, they are not necessarily safe *per se*.

The main objective of this study is to examine the burden of fatal violent injuries on a rural South African community. The violent deaths data used in this report were collected through a verbal autopsy (VA) process during the period 1992 to 2000 in Agincourt, Bushbuckridge, a rural area in the north-eastern part of South Africa with a population of about 69 000 people. Person-years data for the same period, obtained from the Agincourt Health and Demographic Surveillance System (AHDSS), were used for the denominator in the computation of rates.

Violence accounted for 5.9% (170/2 859) of deaths from all causes in the Agincourt area between 1992 and 2000. Of the 170 violent deaths, 68.2% were due to assault while the remaining 31.8% were suicides. The proportion of violent deaths, as proportion of deaths from all causes, is highest in the 15–19 year age group (20.9%, compared to 1.0% amongst those under the age of 15 years and 2.0% among those 60 years and older). The small number of victims in each age group results in wide confidence intervals. The violent deaths proportion, as a proportion of deaths from all causes, is higher in males (9%) than in females (2.3%).

Violence levels appear to be higher among South Africans than among self-settled former Mozambicans, though the observed difference between these two populations is not statistically significant. However, a statistically significant difference is found between levels of death due to assault among migrants and permanent residents.

To address this situation, violence prevention strategies and programmes need to be put in place to reduce violence. However, more research is required in order to identify more risk factors associated with violent behaviour, to study the identified risk factors, and to inform the development of these programmes.

ACKNOWLEDGEMENTS

I acknowledge the substantial help I received from my supervisor, Dr Kathleen Kahn, who was very patient with me during all the stages of report writing. I want to thank the Agincourt Health and Population Unit for providing the data used in this report. Thanks to the Agincourt field operations team, the community from which the data was collected, and the data processing team. There is one man in my life who urged me on by way of his untiring support (financial and moral) and seemingly unlimited belief in me: compared to that man, all else pales. Thank you to my husband, Emmanuel Mosiane.

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ABBREVIATIONS

AIDS	–	Acute Immuno-Deficiency Syndrome
AHDSS	–	Agincourt Health and Demographic Surveillance System
HIV	–	Human Immunodeficiency Virus
NIMSS	–	Non-natural Injury Mortality Surveillance System
PPV	–	Positive Predictive Value
VA	–	Verbal Autopsy
WHO	–	World Health Organization
SSA	–	Sub-Saharan Africa

1.0 INTRODUCTION

Violence is the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, which either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.[1]

It is a fact that interpersonal violence is becoming part of everyday life. In many communities it is regarded as a way of resolving conflicts, and often hidden from public view. In most cases women do not report cases of violence because they fear that they will be stigmatised. As a result many violent incidents go unreported or are misclassified.[2, 3, 4] According to Meel (2003)[3], violence against women, abuse of children and the elderly as well as those in marginalised groups and minorities, is markedly under-reported.

Data from various sources is used to describe the magnitude and nature of violence in a society. These sources include vital registration, and hospital and police records of reported cases of violence. In most African countries, however, there are gaps in these information systems that compromise the evidence base required for proper public health planning. While violent cases provide the numerator for the computation of rates, census data is used as the denominator. Census figures are also unreliable since in most cases there are under-counts of the population. [5, 6]

1.1 Background

Violence is a leading cause of death and non-fatal injury worldwide and an essential public health issue for every country. According to the World Report on Violence and Health, more than 4 000 people around the world die violently every day, nearly half of these by suicide, almost a third by homicide and a fifth in violence related to armed conflict.[7] However, data on

violence is limited and where it is available, it is based largely on self-reports, so it is very difficult to know whether the people concerned overestimate or underestimate the extent of non-fatal violence (physical and sexual assaults). Violent deaths, therefore, represent the tip of the iceberg as far as incidents of violence are concerned because they underestimate the true burden of violence. Most of the physical and sexual assaults that occur daily do not result in injuries needing medical attention and are therefore not reported.

Violence results from a complex interplay of factors at the level of the individual, in relationships, in the community and society. No single factor explains why some individuals behave violently or why some communities experience more violence than others. Interventions to prevent or reduce levels of violence are similarly complex. Known contributors to high levels of violence include: harsh parental discipline, poor monitoring and supervision of children, being a victim of violence and witnessing violence, drug trafficking, access to firearms, alcohol and substance abuse, inequalities of all kinds, poor policing, and norms that discriminate against women and support violence as a means of conflict resolution.[7]

1.2 Statement of the Problem

Recently, there has been an increase worldwide in the incidence of interpersonal injuries affecting people of all ages and both sexes, but especially women and children. Violence not only represents serious immediate implications for health but also future long-term implications for psychological and social development of individuals, families, communities and countries.[8]

In the year 2000, 1.6 million deaths in the world were due to violence. Owing to under-reporting and inadequate surveillance in many regions, this figure probably underestimates the true proportion of violent deaths. Of the estimated total of violent deaths, nearly half were due to suicide, about a third, homicides and a fifth due to armed conflicts. Among people aged 15 to 44 years, it was estimated that suicide was the fifth leading cause of death, homicide the sixth, and armed conflicts the eleventh. Estimated rates of homicide are higher in low- and middle-income societies, while estimated rates of suicide are higher in high-income societies.[8]

The data that has been published on causes of death in South Africa largely cover the apartheid years and demonstrate differences in the mortality profile between subgroups in the country. Apartheid seems to have acted as a catalyst in violence-related activities. One might have expected that the end of the apartheid era and the advent of democracy would result in a decrease in violence in South Africa, but this has not been the case. The "culture of violence" remains pervasive. This, together with marked socio-economic inequalities and extensive poverty, contributes to the high levels of violence in South Africa. A thorough understanding of the underlying determinants, complexities and dynamics of various forms of violence is imperative in order to formulate strategies for its prevention.

1.3 Justification

Violence is among the leading causes of death among people aged 15 to 44 years of age worldwide, accounting for 14% of deaths among males and 7% of deaths among females. In addition, for every person who dies as a result of violence, many more millions are injured and suffer from a range of physical, sexual, reproductive and mental health problems.[8]

In South Africa, a number of studies have reported that violence is a leading cause of injuries. Initial estimates suggest that, of the various sub-types of violence, interpersonal violence is dominant, followed by organised violence, with self-directed violence making up a much smaller proportion[9].

However, much of what is known about injury and violence in South Africa has been informed by epidemiological studies conducted in Cape Town and Johannesburg. A comparison of these studies indicates that in both cities violence is by far the leading cause of mortality and morbidity. The predominance of violence in these cities is echoed in recent police statistics.[9] These studies were conducted in informal settlements in peri-urban areas. While rural areas are considered safer than urban areas little is known about deaths resulting from violence in rural parts of South Africa.

One study suggests that violent deaths in rural South Africa may be higher than previously thought. The Agincourt Health and Demographic Surveillance System (AHDSS) data shows that in the early to mid-1990s, deaths from accidental and violent injuries comprised nearly a third of all deaths in the 5–14 and 15–49 year age groups. Disaggregating by sex revealed that death from injury constituted 35% of all male deaths in the 5–14 year age group and 41% of all male deaths in the 15–49 year age group (compared with 22% and 16% of female deaths respectively). Unintentional injury was the major cause of death in children, with poisoning (mainly paraffin) and burns responsible for two thirds of accidents. In adults, homicide and motor vehicle accidents were responsible for most deaths: 83% of assault deaths occurred in males, most as the result of street violence with injuries from gunshots or stabbing.[5]

The contribution of violence to the global burden of disease is predicted to increase unless substantial efforts are made to address this problem. Governments and non-governmental organisations across the world need to develop a global strategy to address the premature and unnecessary deaths and disability associated with violence. Some strategies featured in the World Report on Violence and Health include: (1) implementing surveillance systems to monitor the incidence and prevalence of violence-related health outcomes; (2) establishing an international network to share information and resources on prevention research and programmes; (3) developing a global agenda to identify and prioritise research needs; (4) conducting cross-national research to better understand risk and protective factors for violence; and (5) implementing interventions and policies that reduce the risk of exposure to violence and promote non-violence. History has shown that humankind can reach across geographic boundaries to solve health problems. A collective effort is needed to ensure a more peaceful world for future generations.[8]

The current report describes the magnitude and nature of violent deaths in Agincourt, a rural sub-district of north-east South Africa. Implications of these findings for violence-prevention programmes are discussed. Further research into risk factors for fatal violence is needed to help formulate effective prevention policies and programmes.

1.4 Literature Review

1.4.1 Violence

The Global Picture

In 1990, about 5 million people died of injuries of all types worldwide, two thirds of them men. Most of these deaths were concentrated among young adults. In this age group causes of death included road traffic accidents, suicides, war, fire and violence, all of which feature on the list of the 10 leading causes of death. Such injuries pose a significant threat to public health yet they have been largely overlooked by the health sector in many countries.[10]

In 1990, the rate of suicides was estimated at 15.5 per 100 000 worldwide. Overall suicide rates ranged from 3.4 per 100 000 in sub-Saharan Africa (SSA) to 30.4 per 100 000 in China. Suicide rates were highest in China and Established Market Economies (EME) and lowest in SSA, Latin America and the Caribbean (LAC). There were an estimated 563 000 homicides (10.5 per 100 000) in the world. Overall homicide rates ranged from 1.0 per 100 000 in EME (-US) to 44.8 per 100 000 in SSA. Homicide rates were highest in SSA and LAC and lowest in EME (-US). There were 502 000 cases of war-related deaths (9.3 per 100 000) in the world. Overall rates of war-related deaths ranged from 52.9 per 100 000 in SSA to no deaths in the United States, EME (-US), or China. Rates of war related deaths were highest in SSA, the Middle Eastern Crescent (MEC), and the Formerly Socialist Economies of Europe (FSE).[11]

According to Diego Cevallos, in Latin America more than 100 000 lives are lost due to violent crime, making a homicide rate of 27 per 100 000 population. This, in his view, indicates that violence claims more deaths than any single disease, and over and above people dying, others are injured or otherwise affected. The victims of crime are mostly young people who are murdered, especially those between the ages of 15 and 29 years.[12]

In Brazil, prior to 1999, violent deaths were more prevalent in the large state capitals and metropolitan areas, but from 1999 onwards there has been a shift to the countryside where violence has continued to grow at a higher rate than before. The homicide rate in Brazil is similar to that of Latin America and victims of homicide also tend to be young (15 to 24 years of age). [13]

The Regional Picture

In Southern Africa, vital registration data on violence-related mortality is not always available. This makes it difficult for one to establish the burden of violent deaths in the region, though it is believed that the violence mortality rate is high. Estimates for Sub-Saharan Africa contained in The Global Burden of Disease series are the only indication of this, but even these estimates are not regarded as representative of the whole population because of incomplete or non-existent records. In this report it is estimated that the violence-related mortality rate in Sub-Saharan Africa in 1990 was 101 per 100 000 with the rate being higher among males.[11]

Some information about violent deaths is available, however, from war-torn countries in the region, such as the Democratic Republic of Congo. For instance, surveys conducted by the International Rescue Committee in the Democratic Republic of Congo showed overall mortality to be strongly associated with the violence-specific mortality rate: areas with the most violence also tended to experience the highest non-violent mortality rates. Health zones with poorest security tended to have the highest death rates. The above-mentioned study showed that in Kalonge, during January 1999 to April 2000, as violence increased over time, deaths from infectious disease also increased correspondingly.[14] This link between death from violence and death from infectious diseases and other non-violent causes was assumed to be a

consequence of the displacement and economic and social disorder that accompanies outbreaks of violence. The results from the 2002 survey, however, suggest that this relationship may be more complex than it seems.

In the city of Maputo, Mozambique, overall injuries accounted for 6.9% of female deaths and 15.7% of male deaths, thus injuries were responsible for more than two male deaths for every female death (718 male deaths compared to 243 female deaths). Deaths due to injuries were particularly high among males aged 15-44 years where violence accounted for 43% of all deaths. Among leading causes of death, homicide was ranked ninth in 1994, claiming 2.3% of Mozambican lives. The deaths were estimated from the city register of deaths which is not immune to under-reporting and misclassifications. [15]

Apart from the DRC and Mozambique, comprehensive information is available for some regions in South Africa. South Africa has the National Injury Mortality Surveillance System (NIMSS) aimed at monitoring violent deaths. Information on South Africa will be the focus of the next section since Agincourt, the study area, is in South Africa.

The South African Picture

Sources of mortality data in South Africa include: Censuses, National Injury Mortality Surveillance System (NIMSS), Death notifications from Department of Home affairs; hospital records and surveys. Available literature for South Africa draws from these sources.

According to the South African Census of 2001, South Africa had a population of 44.8 million people in October 2001. The all-causes mortality rate for South Africa in 2000 was 72 per 100 000 population. There were 59 935 deaths due to injury of which 27 563 (46%) were homicides. Suicide accounted for 9.1% of injury mortality. In terms of rates, the

homicide rate was estimated at 113 per 100 000 for males and 21 per 100 000 for females and the suicide rate was particularly high (26.3 per 100 000) among young males.[16]

In 2006, the estimated population of South Africa was 47.4 million.[17] In the same year non-natural deaths accounted for 8.7% of deaths from all causes of which the highest proportion was among males, 13.0% compared to 4.2% among females. Among those aged 15-19 years, 43.0% of deaths were due to non-natural causes. Assault was responsible for 10.2% of non-natural deaths while suicide accounted for 1% of non-natural deaths.[18]

Based on the study by Matzopoulos RG et al, in South Africa injuries, whether intentional or unintentional, are among the leading causes of death. It is estimated that they accounted for 18% of all deaths recorded in 1996. The figures for 1999 estimate that injury deaths ranked second after AIDS deaths and for economically active males (15–45 years) injuries accounted for approximately 79% of all mortality cases. Non-fatal injuries treated in state health care facilities were estimated at 1.5 million per year with a further 1.5 million treated in private health care facilities. In the same year, interpersonal violence and traffic-related incidents were among the most predominant causes of death and disability in South Africa. For the year 2000, data from this rapidly expanding injury mortality surveillance system indicates that gun-related and traffic-related injuries were the main causes of non-natural deaths in South Africa.[19]

In a 1999 study on the profile of violence in three provinces of South Africa (Gauteng, KwaZulu-Natal and Western Cape), homicide accounted for approximately half of all the non-natural deaths (6 202) which occurred in these regions. Of these, 35.6% were accidents, 7.5% were suicides, and 10.9% were undetermined. The cases of homicide were predominantly among young, black males. More than half of all homicide victims were

between the ages of 15 and 34, thus resulting in the loss of a significant number of potential years of life in South Africa.[20]

The same study showed that more than half (56%) of the homicide victims had been drinking at the time of their death – these victims had very high blood alcohol levels. Violence accounted for just over half (55%) of all injuries presented at trauma facilities in the three provinces included in this study. Victims of violence tended to be males aged between 20 and 39 years of age. A very strong relationship was found between substance abuse, particularly alcohol, and violence. Peden argues that alcohol plays a role in the high rates of violence experienced in South Africa, particularly in the Western Cape where it was found that victims were more likely to be intoxicated at the time of their death than those who had died violently in the other two provinces.[20]

In 2000, the South African Non-natural Injury Mortality Surveillance System (NIMSS) revealed that of the 18 876 registered non-natural deaths, homicide was the leading manner of death, accounting for 44% of all cases. Unintentional incidents accounted for 35%, while suicide accounted for 9% of all cases. For the remaining 12%, the manner of death was undetermined. Homicide was the leading cause of death among males (48.6%), who constituted 80% of all cases, while among women the leading cause of death was unintentional incidents, where women constituted 20% of all cases.[21]

According to the South African NIMSS, in 2001 25 361 fatal injuries were recorded. Although the data were mainly from urban areas, data from rural areas were also included in the NIMSS. This data revealed that homicide was a major cause of all deaths. Over half of the 11 254 homicides were inflicted by firearms, and more than a quarter by sharp objects. Of the 2500 suicide cases, death by hanging accounted for 42%, and firearms for 29%. More than

half of the suicide victims were between 20 and 39 years of age. Blood alcohol concentrations were particularly elevated in firearm and sharp instrument homicides, and in pedestrians and drivers who died in motor-vehicle accidents.[21]

1.4.2 Verbal Autopsy

A verbal autopsy (VA) is a method of determining cause of death based on an interview with the next of kin of the deceased or other caregivers. In order for verbal autopsies to be comparable, they need to be based on a similar interview, and the cause of death must be arrived at in the same way in all cases. In recent years, VAs have been used more widely to provide information on cause of death in areas where civil registration and death certification systems are weak, and where most people die at home without having any contact with the health system. This type of interview is often the only way of determining the cause of death.[22, 23, 24]

In order to overcome the problem of the high proportion of ill-defined deaths in developing countries, retrospective verbal autopsies (VAs) have been developed in a standardized way to assist in determining the cause of death. Verbal autopsy guidelines were first developed in India in the 1960s when the model registration – survey of cause of death (MRS) scheme – first came into existence and as such the first verbal autopsy-based cause-of-death reporting system in the world was introduced in India in 1965.[25]

In a review of VA-based cause-of-death reporting in India, deaths in a community were coded using the VA instrument that was undergoing testing and these were validated with hospital diagnoses. If the deceased happened to have been hospitalised, the medical records from the hospital were retrieved. The reference cause of death was assigned on the basis of the person's

medical record in hospital. However; a major shortcoming of hospital-based reference is selection bias, and the fact that some hospital records are incomplete.[25]

Algorithms for commonly occurring childhood conditions have been tested in a number of settings.[22,23] In general, VAs were shown to diagnose major illnesses contributing to death in children with acceptable sensitivity and specificity. This approach is particularly important in reducing uncertainty about causes of death that are normally assigned to the "ill-defined" categories, as well as validating the diagnoses made by police officers.[26]

In Uganda, the verbal autopsy has been used successfully to assess HIV-associated mortality in populations with relatively high HIV prevalence. This suggests that the method can be relied upon to estimate HIV-associated mortality in populations with a relatively high HIV prevalence.[27] A community-based, cross-sectional, retrospective study was conducted in Mwanza, Tanzania, to identify perinatal death. The VA technique was employed and was found to be a much simpler and more sensitive tool in establishing causes of perinatal death than hospital records in this case, though large-scale studies are required to validate this.[28]

According to Chandramohan et al.[29], VA technique has been used extensively to assess causes of childhood deaths but its validity varies greatly between studies. The sensitivity and specificity of VA for the same cause of death can also vary according to the setting in which the study is done as well as the tools used to gather the information. Chandramohan et al. stress that there is limited information on validation of VA for adult deaths[30], so any application of the VA technique to adult deaths should be used with caution, though it has worked well for childhood deaths and maternal deaths.

1.4.3 Violence Prevention

Violence is preventable. The wide variation in rates of violence between and within nations and over time confirms that violence results from social and environmental factors that can be changed (e.g. its social acceptability). In the World Report on Violence and Health[8], WHO states that there is a growing body of evidence that specially designed and carefully implemented interventions such as home visitations and parent training can prevent violence and are cost-effective.

While violence is largely preventable, there are many obstacles to putting effective effort into dealing with the issue at national or provincial levels. A major obstacle is simply the lack of information. A second problem relates to the feasibility of policy options to tackle the problem. Many decision makers still believe that the traditional approaches of the criminal justice system are the only ones that "work". A third problem is one of determination. Violence is an extremely emotional issue and many countries tend to be reluctant to take initiatives that are perceived as challenging long-established attitudes or practices. It can take considerable political courage to implement new approaches in areas such as policing and public security.[8]

The costs of violence, whether direct or indirect, are extremely huge. Worldwide, health care expenditure is directly affected by violence. Indirectly, violence has a negative effect on the economy. It slows down economic development, increases economic inequality, wears down human and social capital and results in an increase in law enforcement expenditure.[31]

It is imperative that policy makers and other stakeholders know the costs of injury in order to set informed priorities in the planning of injury prevention strategies. Data from Groote

Schuur Hospital in Cape Town, for instance, indicates that the direct costs of hospital treatment of firearm-related injuries amounted to R3 858 331 for 969 patients in 1998 (an average of R3 981.77 per patient). Inclusion of estimated productivity losses and other indirect costs for the 969 patients would then amount to R29 679 315 per annum (for a single Cape Town hospital). If violence could be limited some of the money currently used to treat violence-related injuries could be used for other important health issues.[32]

2.0 STUDY OBJECTIVES

2.1 Main Purpose of Study

To determine the rate of mortality due to violent injuries among residents of the Agincourt sub-district situated in the rural north-east of South Africa. This could provide the impetus for an evidence base for development of violence prevention interventions, policies and strategies, especially primary prevention programmes.

2.2 Specific Objectives

For the Agincourt sub-district, Limpopo Province, 1992 – 2000:

- To determine trends in mortality due to violence by age and sex;
- To describe the types of violence occurring in the area, and method of assault and suicide;
- To compare the proportion of violent deaths between South African residents and former Mozambican refugees, as well as between migrants and permanent residents.

3.0 MATERIALS AND METHODS

3.1 Study Area

The Agincourt field site, Bushbuckridge, in South Africa's rural north-east, is a defined sub-district of 21 villages with a total population of 69 000 people. Every village in the area has a primary school, and some have a secondary school. The area has four permanent clinics, one mobile clinic and one health care centre, all of which refer patients to one of three district hospitals situated 25 to 60 kilometres away.[33] The majority of people in the area speak XiTsonga, and about one third of the community are self-settled former Mozambican refugees who escaped the civil war in their country in the early to mid-1980s.[34] Employment opportunities are very scarce in the area leading to high unemployment levels and extensive labour migration. As a result of this, some people depend on the income from remittances from migrant workers.

3.2 Data Sources

This study involves the secondary analysis of data collected through the Agincourt Health and Demographic Surveillance System (AHDSS) between 1992 and 2000. The AHDSS entails an ongoing systematic collection, analysis and interpretation of demographic and health data, in a defined geographical community. Data collected through such a system are essential for planning, implementation, and evaluation of public health practice. Such data must be disseminated in a timely manner to those who need to know. The final link in the surveillance chain is the application of these data to prevention and control.

Cause-of-death data, determined through a verbal autopsy (VA), were used for the numerator, and person years were used as the denominator in the computation of rates. The data collection methods are described below.

3.2.1 Agincourt Health and Demographic Surveillance System

The Agincourt Health and Demographic Surveillance System (AHDSS) was established in 1992 in Agincourt and a baseline census was conducted at that time. All households in 21 neighbouring villages were visited and all the persons living in these households were enumerated. There were no maps at village level, so the fieldworkers had to develop hand-drawn (sketch) maps as they went along. These maps need to be updated annually as some dwelling units are demolished and there are new developments. The same can be said for households, where some are dissolved and new ones established.

Every 12 months, households were revisited in order to update the AHDSS and record all vital events since the previous census update. The AHDSS field team, which comprised 20 local fieldworkers, four supervisors, three VA fieldworkers and one VA supervisor, conducted the fieldwork each year. The existing information on the members of each household was pre-printed on the household census update form (see blank census form in Appendix A). The annual update involved checking the status of each individual member of a household and recording any changes. The detailed forms were completed for all vital events (births, deaths, in- and out-migration).[35]

The census fieldworker interviewed the responsible adult available at the time of the visit, using the respondent's mother tongue. If a death had occurred in the 12 months prior to the interview, the fieldworker would fill in a death form in duplicate so that one form could be

used for data entry while the other was passed on to the VA team. If a birth had occurred, pregnancy outcome forms were completed, with questions directed where possible to the woman who had given birth. If a new member had joined the household an in-migration form was filled in and if a member had left the household an out-migration form was completed. Residents were defined as permanent residents if they had resided in the study site for six months or more in the preceding year, or as migrants if they had resided in the study site for fewer than six months (as long as they still regarded Agincourt as home).

3.2.2 Data Quality

Quality of work was ensured at four levels. After the census form had been completed, the fieldworkers checked each other's work. Thereafter, the forms were checked by the team supervisor. If the supervisor was satisfied with the quality, the forms were then passed on to two quality controllers at the main field office who then also checked the form. If they found mistakes that could be corrected without going back to the field, they made the corrections themselves. Otherwise, the forms were returned to the fieldworker concerned to make the corrections and, where necessary, to return to the field to rectify the mistake. In addition, fieldworkers were retrained to avoid repetition of the same mistakes. Once the controllers were satisfied with the forms, they were passed on to the data capture team. During data entry, quality was ensured through built-in validation checks on the computer data-capturing programme, e.g. there could be no birth attributed to a male.

Quality was also ensured by conducting supervised visits and providing constructive feedback to the concerned fieldworker to improve the quality of work, and also through random duplicate visits conducted by the supervisors to 2% of households in the study site.

Date of entry (by birth or migration) of each individual into the database, and his/her departure (via death or out-migration) from it, was recorded, providing person years for the denominator for the computation of rates. The completeness of vital registration in the AHDSS is considered to be high, that is, birth and death registrations are virtually complete in the Agincourt sub-district.[5]

3.2.3 Verbal Autopsy

For every death identified during the annual AHDSS update, a verbal autopsy (VA) was conducted by specially trained fieldworkers to establish the cause of death. The VA fieldwork team consisted of three fieldworkers and one supervisor. The team was given special training on common diseases in the area and on how to speak to people who had been bereaved.

When the VA fieldworkers entered a household where there had been a death, they introduced themselves and explained the objectives of the VA. They identified the person who cared for the deceased most closely during the terminal illness, obtained informed consent from the respondent, and then conducted the interview in the respondent's mother tongue, XiTsonga.[33]

The VA questionnaire (see Appendix B) included both open and closed questions. In the open section, the respondent was asked to describe all symptoms and signs preceding death in his/her own words, as well as treatment received and the response to it. The fieldworker did not ask leading questions but probed for completeness and clarity of the sequence of events

In order to enhance the quality of work, researchers supervised the interviews themselves in the initial stages; thereafter, a high standard was maintained by regular review of completed questionnaires and personalised feedback to the relevant fieldworker. Medically trained

clinicians, as in other similar studies[22,25], then assessed the completed questionnaires. Two medical practitioners, blind to each other's assessment, reviewed the information and assigned a diagnosis for each death. If the two clinicians came to the same diagnosis, this was accepted as the "probable cause of death". Where this was not the case, the two practitioners discussed the case. If they came to a consensus the diagnosis was accepted. If they could not agree, a third practitioner made an independent assessment. If two of the three diagnoses corresponded this was accepted as the cause of death, otherwise the cause of death was described as undetermined. Where possible, a main (underlying) cause, immediate cause, and contributory factors were assigned.[5]

Agincourt VA diagnoses from 1992 to 1995 were validated by comparison with hospital reference diagnoses, for those who had died in hospital, as gold standard sensitivity, specificity and positive predictive values (PPV) were calculated for each cause of death. Hospital deaths, however, do not represent all deaths in the community, with accidents and violence typically under-represented.[5]

In Agincourt, 127 hospital diagnoses were used as reference in the validation of VA diagnoses. Sensitivity, specificity as well as PPV were high for parasitic diseases, non-communicable diseases and for violent and accidental deaths. For violent and accidental deaths the values were 88%, 98% and 70% respectively. The cause of death distribution for VA diagnoses from the Agincourt validated sample was similar to the one from the hospital sample. This implies that the frequency of cause of death in the overall Agincourt population, derived by VA, is likely to be valid and can therefore be used to support planning and resource allocation. Thus VA findings can be used effectively in areas without vital registration to prioritise public health problems, inform resource allocation, and to target and evaluate community-based interventions.[34]

3.2.4 Limitations of Verbal Autopsy

An underlying assumption of the VA method is that each investigated cause of death has a set of observable features that can be reliably recalled during a VA interview. Furthermore, it is assumed that the features of one cause of death can be distinguished from those of another. This is easier to achieve in the case of violence than illnesses such as malaria. The underlying mix of causes of death in the population affects the accuracy of the VA, as do cultural aspects. The willingness to accept a VA interview, the ability of the respondent to describe the final illness, and the way in which diseases are understood and described in the community will vary from culture to culture. Misclassification errors, due to the VA approach, can also result in underestimation or overestimation of cause-specific mortality rates and proportions.[1]

3.3 Data Management and Analysis

A database for the Agincourt Health and Demographic Surveillance System (AHDSS) and verbal autopsy that was already available was accessed and descriptive analysis of the data was conducted. The rates were calculated using the verbal autopsy information as the numerator and person-years from the AHDSS data as the denominator. Person-years are used because it was not possible to follow an entire cohort at risk to watch for the development of the violent deaths. Data on injuries were coded using the International Classification of Diseases (ICD-10 Manual).[35] The data were analysed using SAS and some calculations were made in Excel.

The information from the AHDSS was dealt with in a confidential manner and only grouped results are presented in this study. There were few cases of violent deaths occurring each year and as a result, the analysis in this report will be based on 3-year periods: 1992–1994, 1995–1997 and 1998–2000.

3.4 Ethical and Legal Considerations

This study was granted an Ethical clearance, Ref: R14/49 Mosiane – Protocol number M03-07-16, by the University of the Witwatersrand Committee for Research on Human Subjects. This was renewed in 2009 – Protocol number M090477 (see Appendix C).

The introduction of population registration and annual updates was politically sensitive in the early 1980s and required thorough justification to community members and their leadership. After a series of negotiations their support and permission was granted on condition that the results of the project contributed positively in terms of the betterment of health services in the area and that the local communities received feedback on the results of the project on an ongoing basis.

The communities receive feedback from the AHDSS through printed village fact sheets, which are updated each year, and through annual community meetings. Discussions on the information from the AHDSS are also held with district and regional health-service managers and senior officials of the Limpopo Province and National Department of Health.[33]

The AHDSS has contributed positively towards the provision of information for local health planning. For example, population profiles and their geographical distribution have helped to define clinic catchment areas, vulnerable groups and potential uses of local services. Early results on causes of death have established the basis for better targeting of district interventions. The feedback given to communities continues to provide a general basis for health promotion activities and development initiatives.[34]

4.0 RESULTS

In this report violent deaths are regarded as those deaths that occur as a result of assault and suicide only. In section 4.2, assault and suicide are analysed together to get a bigger picture in terms of the overall impact of violent deaths (assault and suicide in this context) and in the sections that follow assault and suicide are analysed separately (sections 4.3 and 4.4 respectively).

4.1 Demographic Findings

During the eight-year period, 1992 to 2000, 2 859 deaths were recorded in the Agincourt sub-district. This section will examine the distribution of these deaths in terms of age, sex, nationality and residence status, which are regarded as risk factors.

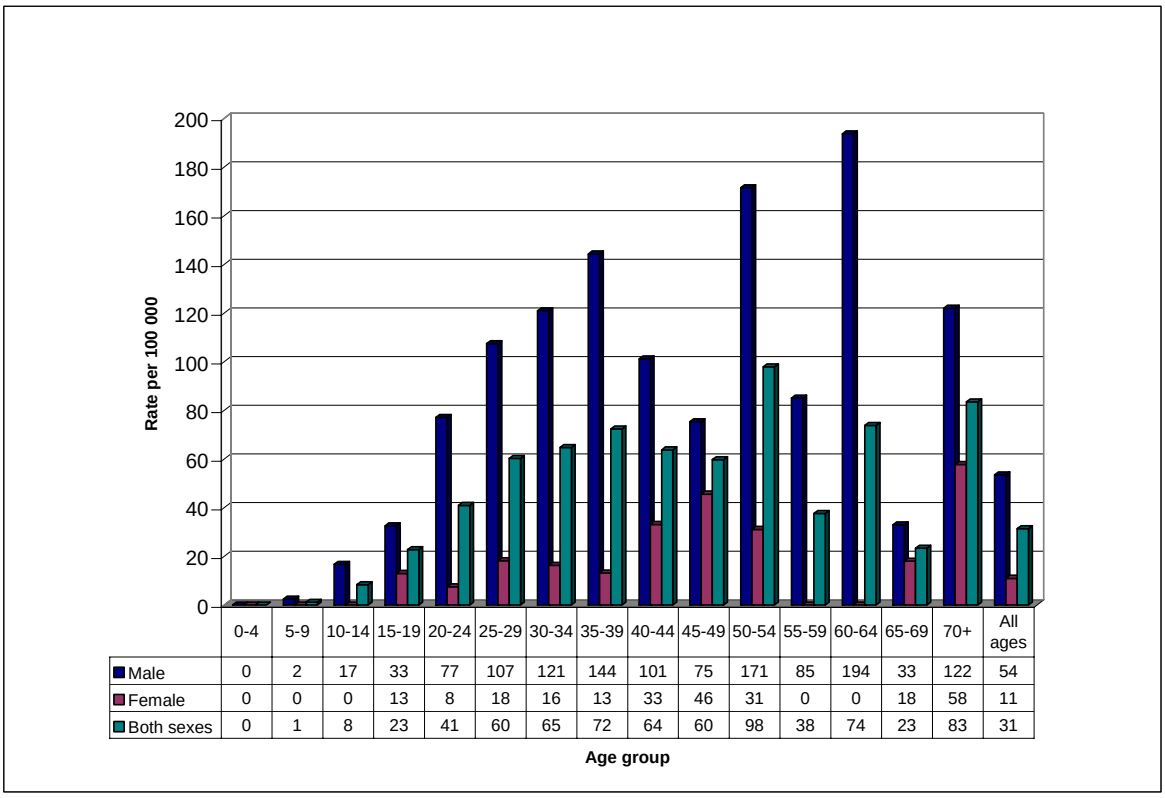
Table 1: Distribution of deaths by sex, Agincourt 1992–2000

Cause of death	Males			Females			Total		
	No.	% All Deaths	Rate per 100 000	No.	% All Deaths	Rate per 100 000	No.	% All Deaths	Rate per 100 000
Violence	139	9.0	53	31	2.3	11	170	5.9	31
Assault	99	6.4	38	17	1.3	6	116	4.1	22
Suicide	40	2.6	15	14	1.1	5	54	1.9	10
Deaths from other causes	1 399	91.0	538	1 290	97.7	459	2 689	94.1	497
Total deaths	**1 538**	**100.0**	**592**	**1 321**	**100.0**	**470**	**2 859**	**100.0**	**529**

Overall, rates of deaths from all causes ranged from 470 per 100 000 among females to 592 per 100 000 among men over the eight-year period. Of all deaths (from all causes), 1 538 (53.8%) occurred in men and 1 321 (46.2 %) in women, and 170 of the deaths (5.9%) occurred violently. Of the violent deaths, 139 (81.8%) occurred among males and 31 (18.2%) among females.

4.1.1 Age and Sex Distribution of Violent Deaths

Figure 1: Rates of violence-related mortality by age group and sex, Agincourt 1992 – 2000

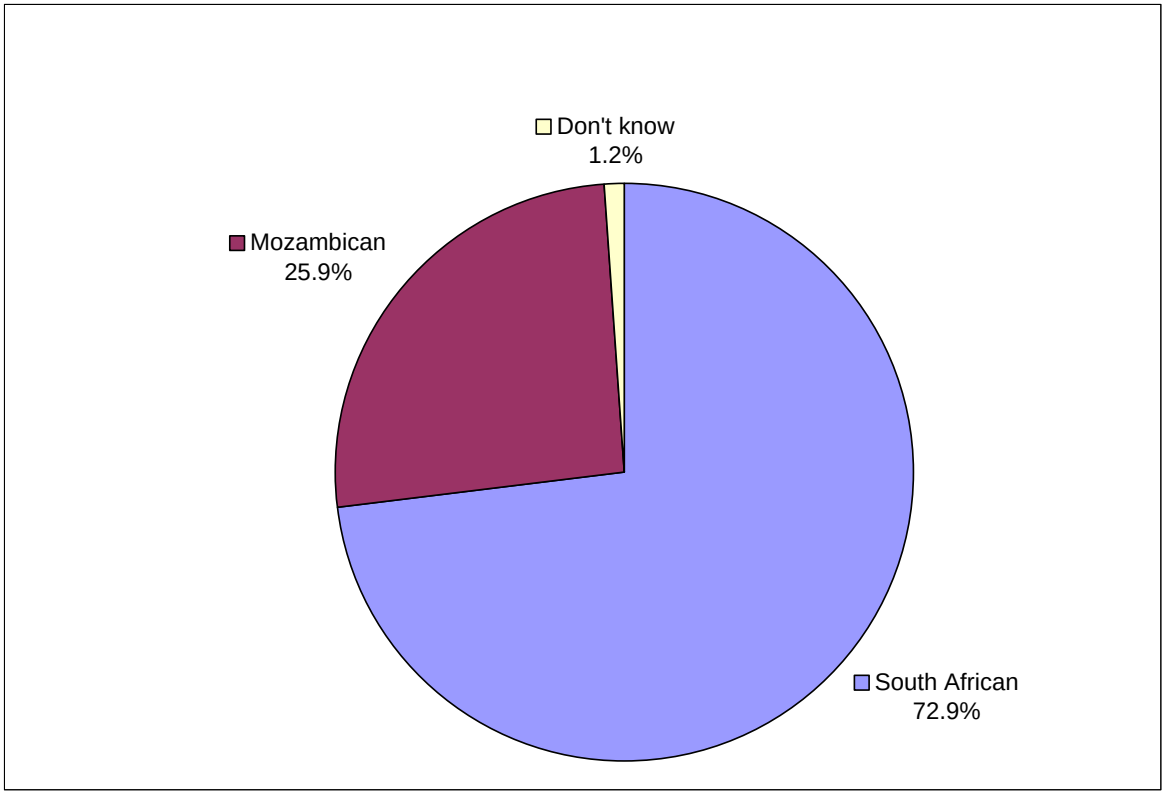


	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	All ages
Male	0	2	17	33	77	107	121	144	101	75	171	85	194	33	122	54
Female	0	0	0	13	8	18	16	13	33	46	31	0	0	18	58	11
Both sexes	0	1	8	23	41	60	65	72	64	60	98	38	74	23	83	31

In general, the rate of violent mortality increases with age up to the ages of 35 to 39 years when it starts to fluctuate. This is also true for males, but for females a different picture is observed where the rate remains low up to age 39 and then peaks between the ages of 45 and 49 years, after which it fluctuates. The highest rates of violent deaths were recorded in the 50–54 year age group. This is mainly on account of a sharp increase in the male violent deaths from the age of 15 years. For males, the rate starts as low as 17 per 100 000 among the 10–14-year-olds and rises as high as 194 per100 000 among the 60–64-year-olds. In contrast, there were no deaths among females in these age groups.

4.1.2 Nationality of Violent Death Victims

Figure 2: Distribution of violent death victims by nationality, Agincourt 1992 – 2000



According to the available literature on Agincourt, about 29.0%[36, 37] of the population in the area is composed of former Mozambican self-settled refugees. When it comes to the distribution of violent deaths, a similar picture is observed, where former Mozambican refugees constitute 25.9% of all violent deaths, South Africans account for 72.9% of the violent deaths, while the nationality of 1.2% of the victims is not known.

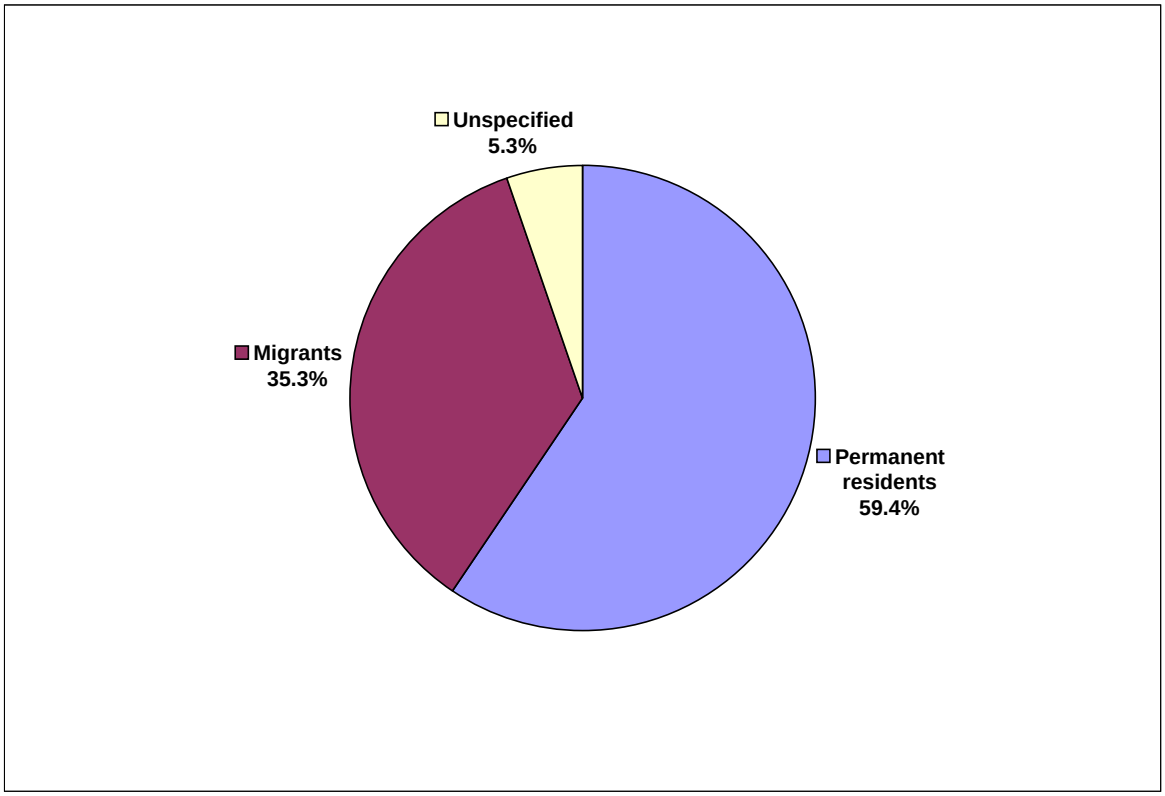
Table 2: Cause of death by nationality, Agincourt 1992 – 2000

Cause of death	South African		Former Mozambican		Unspecified		Total	
	No.	%	No.	%	No.	%	No.	%
Violence	124	6.0	44	5.8	2	8.3	170	5.9
Assault	83	4.0	32	4.2	1	4.2	116	4.1
Suicide	41	2.0	12	1.6	1	4.2	54	1.9
Other causes	1 958	94.0	709	94.2	22	91.7	2 689	94.1
Total	**2 082**	**100.0**	**753**	**100.0**	**24**	**100.0**	**2 859**	**100.0**

Assault constitutes the cause of 4.2% of deaths among former Mozambicans and 4.0% among South Africans. The proportion of suicides is slightly higher among South Africans (2.0%) than among former Mozambicans (1.6%). A Z-test, using the standard normal distribution, is used to assess whether the observed differences between the two proportions is statistically significant. It was found that there was no significant difference in the proportion of assault victims between South Africans and former Mozambican refugees. The same goes for the observed difference in the proportion of suicide victims. This was also reflected by logistic regression, where no association was found between nationality and assault (p=0.5176) and the confidence interval includes 1.

4.1.2 Residence Status of Violent Death Victims

Figure 3: Distribution of violent death victims by residence status, Agincourt 1992–2000



Permanent residents are people who lived in the Agincourt rural village for at least six months of the year preceding the survey update. Permanent residents constitute 59.4% of the violent deaths, migrants form 35.3% of the cases and for the remaining 5.3% of the victims the residence status is not stated. Migrants are away from the rural village for six months or more in the preceding year, largely working or in search of jobs since there is a scarcity of employment in the study area. Of these migrants, 93.3% were males.

Table 3: Cause of death by residence status, Agincourt 1992–2000

Cause of death	Permanent residents		Migrants		Unspecified		Total	
	No.	%	No.	%	No.	%	No.	%
Violence	101	4.5	60	14.3	9	4.5	170	5.9
Assault	59	2.6	51	12.1	6	3.0	116	4.1
Suicide	42	1.9	9	2.1	3	1.5	54	1.9
Other causes	2 135	95.5	361	85.7	193	95.5	2 689	94.1
Total	**2 236**	**100.0**	**421**	**100.0**	**202**	**100.0**	**2 859**	**100.0**

The proportion of assault is higher among migrants (12.1%) than among permanent residents in the area (2.6%). As far as suicides are concerned, the proportions in these two groups are essentially the same, 2.1% and 1.9% for migrants and permanent residents respectively. The observed difference in the proportions of violent deaths due to assault among permanent residents and migrants is statistically significant. Logistic regression was used to generate the odds ratios (ORs) and 95% confidence intervals for the association of migrant status to deaths due to assault. It was found that migrants were 3.6 times more likely to die of assault than permanent residents with 95% confidence intervals (1.573, 8.104) and a p-value of 0.0023.

4.2 Magnitude of violent deaths

4.2.1 Mortality Rates

Table 4 presents the mortality rates and their confidence intervals by sex for different time periods.

Table 4: Mortality rates by sex and time period, Agincourt 1992–2000

Sex and time period	Person-years (T)	Violent deaths (d)	Rate per 100 000 (λ)	95% Confidence interval	
				Lower limit	Upper limit
Males	**259 667**	**139**	**54**	**45.3**	**63.2**
1992–1994	79 265	44	56	41.3	74.6
1995–1997	94 563	45	48	35.5	63.7
1998–2000	85 839	50	58	44.2	76.9
Females	**281 081**	**31**	**11**	**7.8**	**15.7**
1992–1994	86 644	8	9	4.6	18.5
1995–1997	102 352	9	9	4.6	16.9
1998–2000	92 084	14	15	9.0	25. 7
Both sexes	**540 748**	**170**	**31**	**27.1**	**36.5**
1992–1994	165 909	52	31	23.9	41.1
1995–1997	196 915	54	27	21.0	35.8
1998–2000	177 923	64	36	28.1	46.0

Mortality rates from violence are higher for males than that for females for all time periods. Males experienced a rate of 54/100 000 person years with the 95% confidence interval ranging from 45.3 to 63.2, while females had a rate of 11/100 000 with 95% confidence interval (7.8 to 15.7). These results are presented graphically in Figure 4, plotting trends over time.

Table 5: Mortality rates by 5-year age groups, Agincourt 1992–2000

Age Group	Person-years (T)	Violent deaths (d)	Rate per 100 000 (λ)	95% Confidence interval		No. of deaths from all causes	Violent deaths as a percentage of all deaths
				Lower limit	Upper limit		
0 – 4	78 533	0	-	-	-	576	-
5 – 9	81 095	1	1	0.2	8.8	54	1.9
10 – 14	71 474	6	8	3.8	18.7	54	11.1
15 – 19	61 347	14	23	13.5	38.5	63	22.2
20 – 24	51 229	21	41	26.7	62.9	96	21.9
25 – 29	41 475	25	60	40.7	89.2	128	19.5
30 – 34	33 992	22	65	42.6	98.3	143	15.4
35 – 39	27 614	20	72	46.7	112.3	164	12.2
40 – 44	21 954	14	64	37.8	107.7	145	9.7
45 – 49	16 726	10	60	32.2	111.1	132	7.6
50 – 54	12 258	12	98	55.6	172.4	129	9.3
55 – 59	10 628	4	38	14.1	100.3	119	3.4
60 – 64	9 483	7	74	35.2	154.8	154	4.5
65 – 69	8 557	2	23	5.8	93.4	197	1.0
70+	14 382	12	83	47.4	146.9	705	1.7
Total*	**540 748**	**170**	**31**	**27.1**	**36.5**	**2859**	**5.9**

* Total includes unspecified age

Table 6: Mortality rates by 15-year age groups, Agincourt 1992–2000

Age Group	Person-years (T)	Violent deaths (d)	Rate per 100 000 (λ)	95% Confidence interval		No. of deaths from all causes	Violent deaths as a percentage of all deaths
				Lower limit	Upper limit		
0 – 14	231 102	7	3	1.4	6.4	684	1.0
15 – 29	154 051	60	39	30.2	50.2	287	20.9
30 – 44	83 560	56	67	51.6	87.1	452	12.4
45 – 59	39 612	26	66	44.7	96.4	380	6.8
60+	32 422	21	65	42.2	99.3	1 056	2.0
Total*	**540 748**	**170**	**31**	**27.1**	**36.5**	**2 859**	**5.9**

* Total includes unspecified age

Analysis is done based on the five-year age groups but because of low violent death counts in some age groupings, analysis was also done using 15-year age groups. Based on the five-year age groups, the mortality rate increases sharply from the age of 15 years, peaks between the ages of 50 and 54 years, after which it decreases. Of all the violent deaths, the highest proportion (35.3%) is among the 15–29-year-olds, followed by those aged 30–44 years (32.9%). It should also be noted that, based on the 15–year age groups, within the 15–29 year age group, 20.9% of deaths from all causes occurred violently. The small number of victims in each age group results in the wide confidence intervals.

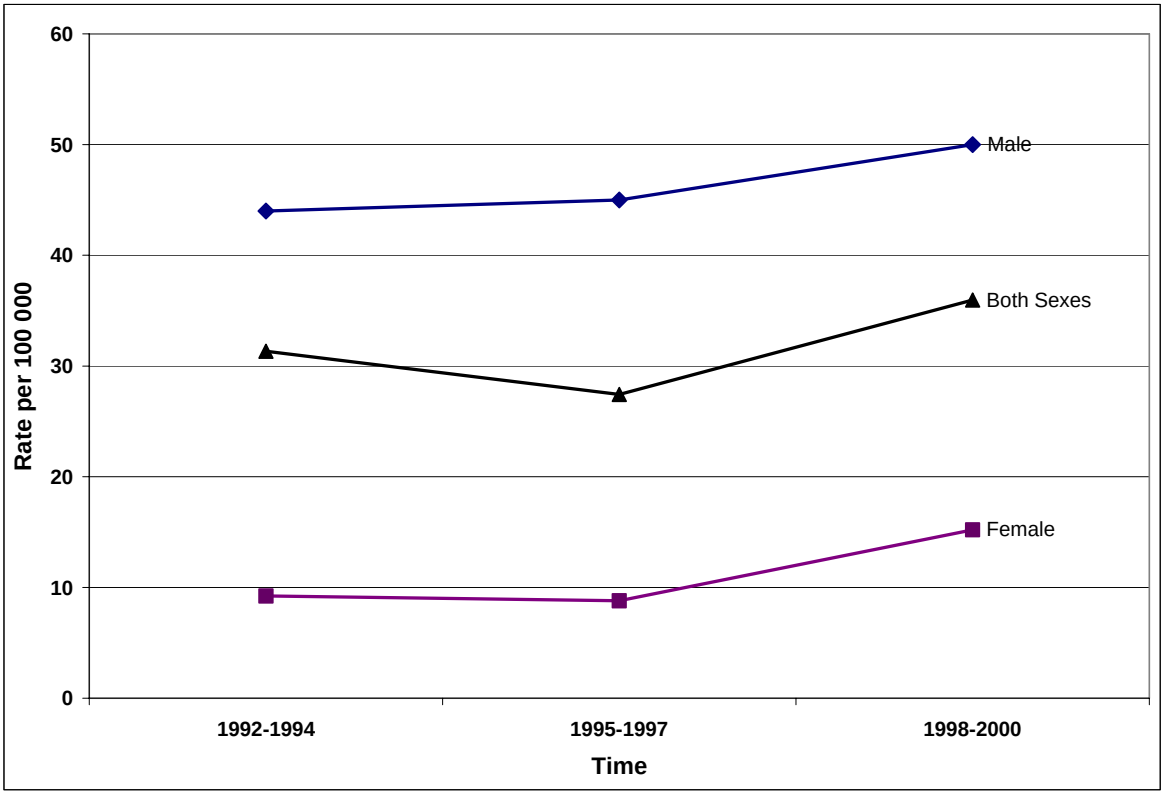
Table 7: Mortality rates by sex, Agincourt 1992–2000

Sex	Person-years (T)	Violent Deaths (d)	Rate per 100 000 (λ)	95% Confidence interval		No of deaths from all causes	% violent deaths / all deaths
				Lower limit	Upper limit		
Male	259 667	139	54	45.3	63.2	1 538	9.0
Female	281 081	31	11	7.8	15.7	1 321	2.3
Total	**540 748**	**170**	**31**	**27.1**	**36.5**	**2 859**	**5.9**

The mortality rate is highest among males. The violent deaths proportion, as a proportion of deaths from all causes, is higher in males (9.0%) than in females (2.3%). The observed difference is statistically significant at $p<0.05$ level. The highest proportion (81.8%) of violent deaths occurred among males and the remaining 18.2 % occurred among females. The Relative Risk (RR) associated with being male is 4.5, which means that males are almost five times more likely than females to die violently.

4.2.2 Trends of Violent Deaths by Sex

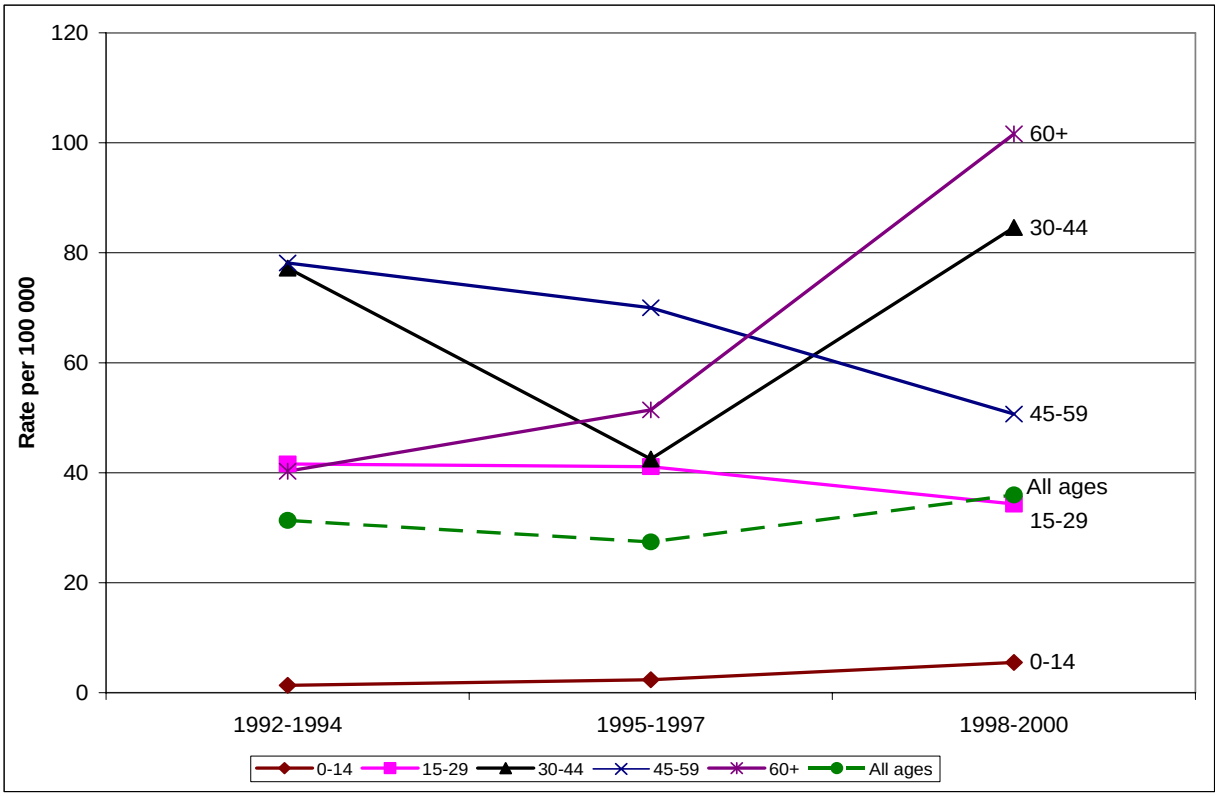
Figure 4: Trend of violent death rates by sex, Agincourt 1992 – 2000



Males consistently experienced higher mortality rates than females over the eight-year period of observation. The rate of violent deaths among males is higher than in the general population. The rate starts at 44/100 000 person-years-at-risk in the 1992–1994 period and increases to 50 per 100 000 person-years-at-risk in the period 1998–2000. Among females, the rate remains relatively low over the years: in the 1992–1994 period the rate was 9 per 100 000 person-years-at-risk and by the 1998–2000 period it had increased to 15 per 100 000 person-years-at-risk.

4.2.3 Trends of Violent Deaths by Age Group

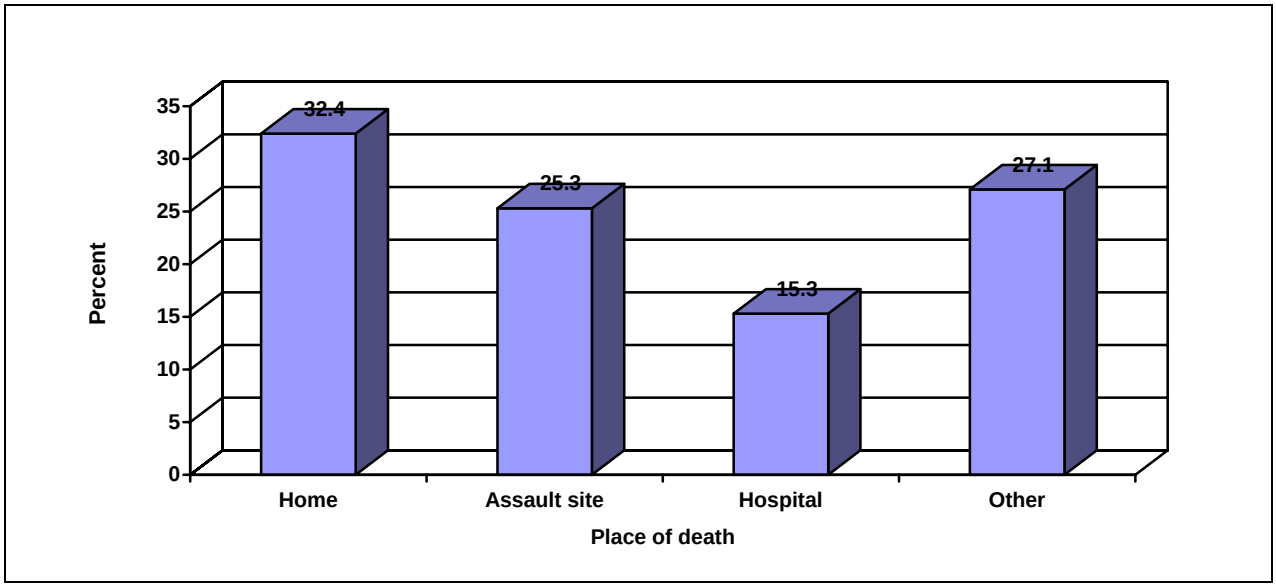
Figure 5: Trends of violent deaths by age group, Agincourt 1992 – 2000



Overall, violent deaths remained at a relatively low level over the eight-year period, with a dip in the 1995–1997 period. In the 0–14 age group the rate increased steadily over time but remained at low levels. Mortality rates due to violence decreased over time in the 15–29 and 45–59 age groups and increased over time among those aged 60 years and older, while the rate fluctuated over the years among those 30–44 years of age, with a marked decline in the 1995–1997 period.

4.2.4 Place of Death

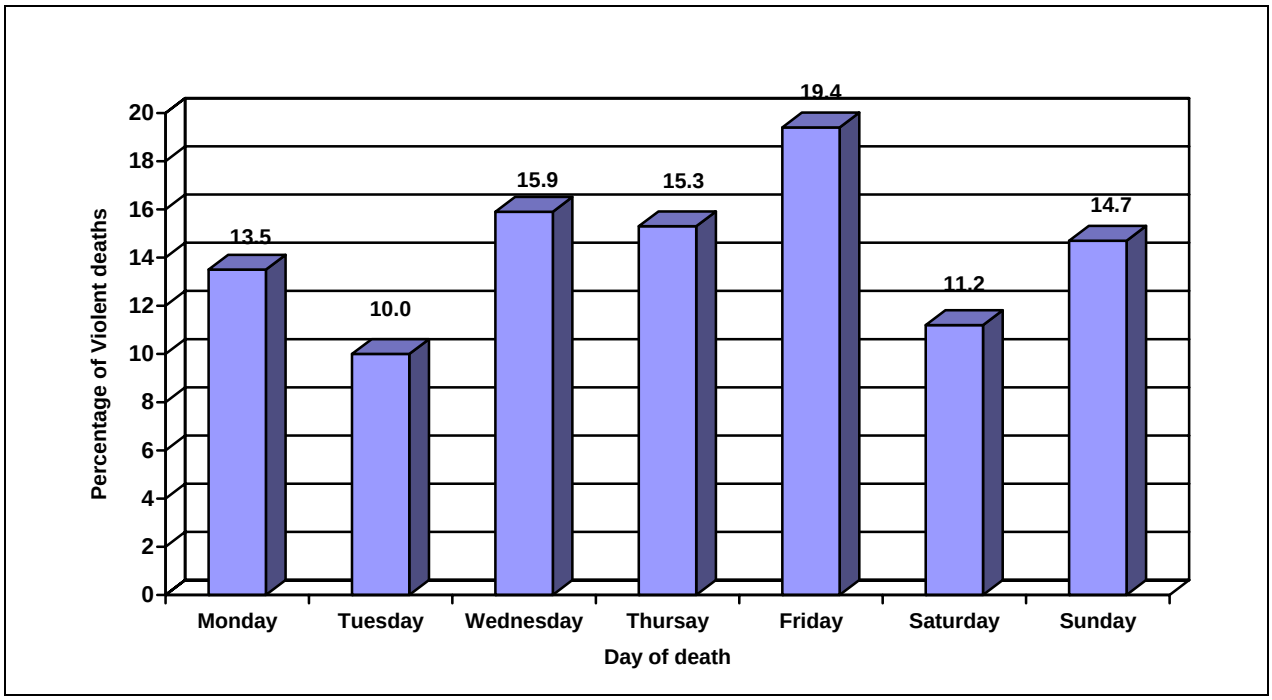
Figure 6: Violent deaths by place of death, Agincourt 1992–2000



Nearly a third (32.4%) of victims of violence died at home, just over a quarter (25.3%) died at the assault site, 15.3% died in a hospital while for 27.1% of the victims the place of death was recorded as “other”.

4.2.5 Day of Death

Figure 7: Distribution of violent deaths by day of death, Agincourt 1992 – 2000



The highest proportion (19.4%) of violent deaths occurred on Friday, the day when working people in the area get paid and hence have money to spend on alcohol. During the other weekdays the proportions were lower. Friday, Saturday and Sunday together accounted for 45.3% of violent deaths as one would expect since these three days collectively account for 42.9% of the week.

4.2.6 Alcohol and Substance Abuse in the Past Year

Figure 8: Alcohol usage in the past year by violent death victims, Agincourt 1992-2000

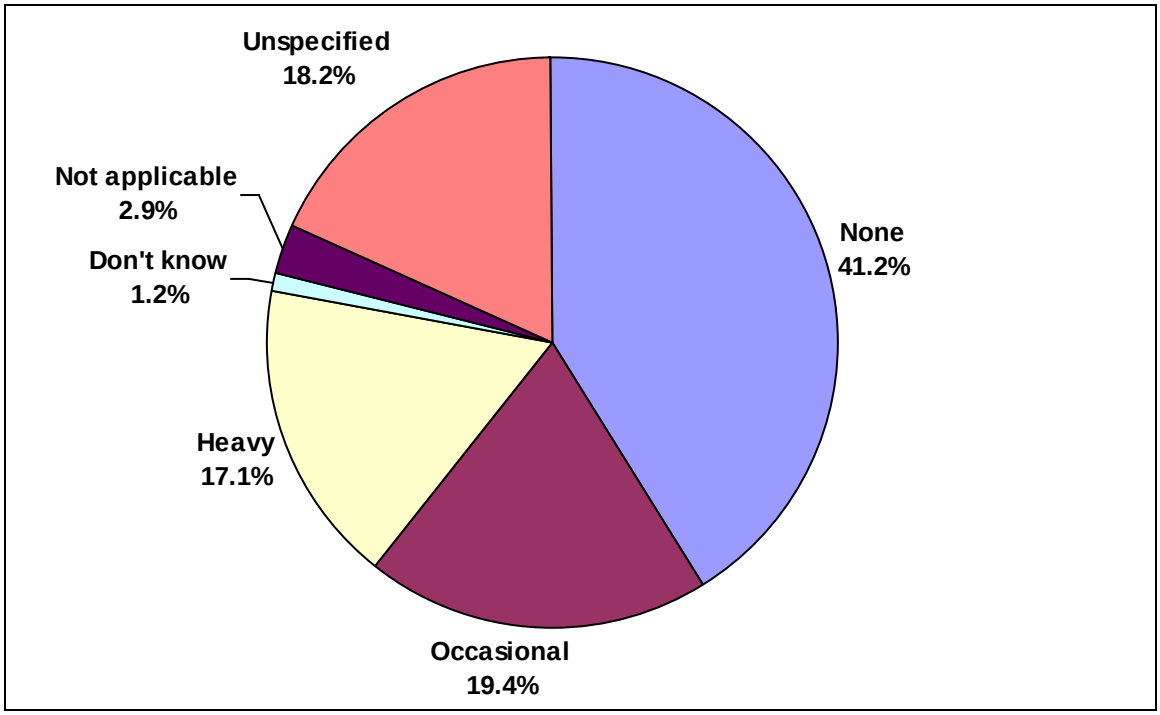
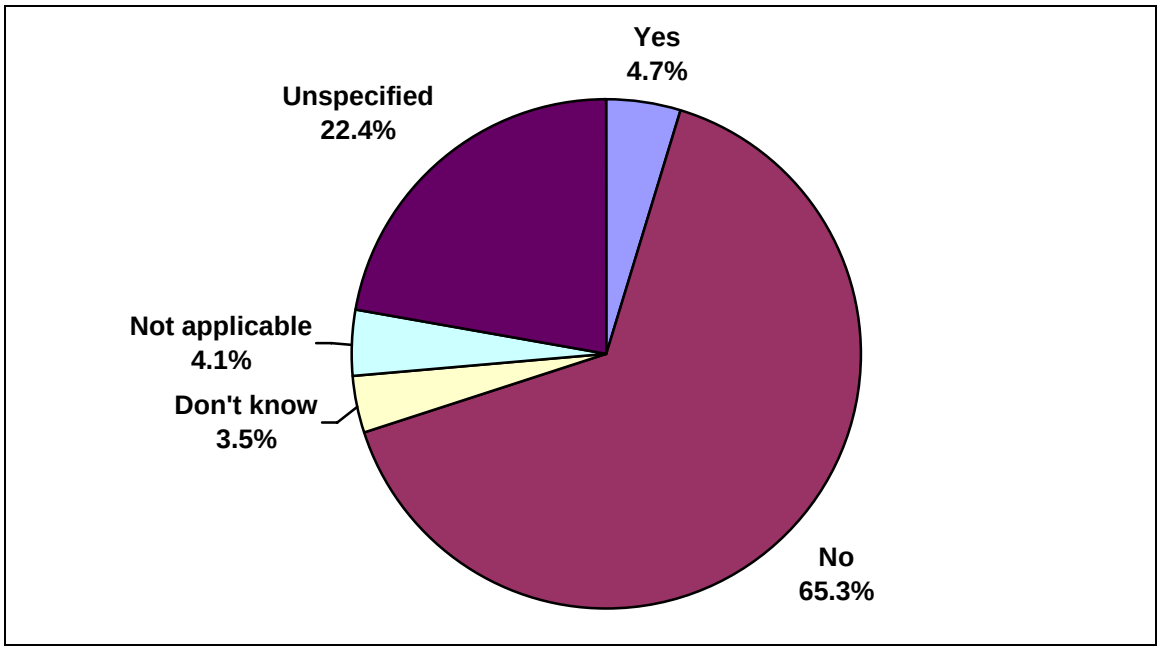


Figure 9: Substance usage in the past year by violent death victims, Agincourt 1992-2000



Forty-two percent of the victims were reported not to have used alcohol in the past year, while 17.1% of the victims were reported to be heavy drinkers and 19.4% occasional

drinkers in the previous year. With respect to substance abuse, respondents reported that 65.3% of victims never abused substances while 4.7% of them did; for 4.1% of cases it is not known whether they had abused substances in the previous year. Alcohol and substance abuse might have played a role in the observed levels of violence, although the level of use may be under-reported.

4.3 Assault Victims

Analyses in this section are based on the 118 deaths that resulted from assault in the Agincourt area over the eight-year period, 1992 to 2000,

4.3.1 Mortality Rates

Table 8: Assault mortality rates by sex and time period, Agincourt 1992–2000

Sex and time period	Person-years (T)	Deaths (d)	Rate per 100 000 (λ)	95% Confidence interval	
				Lower limit	Upper limit
Males	**259 667**	**99**	**38**	**31.3**	**46.4**
1992–1994	79 265	33	42	29.6	58.6
1995–1997	94 563	35	37	26.6	51.5
1998–2000	85 839	31	36	25.4	51.4
Females	**281 081**	**17**	**6**	**3.8**	**9.7**
1992–1994	86 644	6	7	3.1	15.4
1995–1997	102 352	5	5	2.0	11.7
1998–2000	92 084	6	7	2.9	14.5
Both sexes	**540 748**	**116**	**21**	**17.9**	**25.7**
1992–1994	165 909	39	24	17.2	32.2
1995–1997	196 915	40	20	14.9	27.7
1998–2000	177 923	37	21	15	29

The mortality rate from assault is higher for males than for females. Males experienced a rate of 38/100 000 person-years with 95% confidence intervals ranging from 31.3 to 46.4, while females had a rate of 6/100 000 with 95% confidence intervals of 3.8 to 9.7. This gender pattern echoes the pattern for all violent deaths (assault and suicides combined).

Table 9: Assault mortality rates by 5-year age groups, Agincourt 1992–2000

Age Group	Person-years (T)	Violent deaths (d)	Rate per 100 000 (λ)	95% Confidence interval		No. of deaths from all causes	Violent deaths as a percentage of all deaths
				Lower limit	Upper limit		
0 – 4	78 533		0	-	-	576	0.0
5 – 9	81 095	1	1	0.2	8.8	54	1.9
10 – 14	71 474		0	-	-	54	0.0
15 – 19	61 347	9	15	7.6	28.2	63	14.3
20 – 24	51 229	14	27	16.2	46.1	96	14.6
25 – 29	41 475	16	39	23.6	63.0	128	12.5
30 – 34	33 992	16	47	28.8	76.8	143	11.2
35 – 39	27 614	15	54	32.7	90.1	164	9.1
40 – 44	21 954	13	59	34.4	102.0	145	9.0
45 – 49	16 726	6	36	16.1	79.8	132	4.5
50 – 54	12 258	10	82	43.9	151.6	129	7.8
55 – 59	10 628	4	38	14.1	100.3	119	3.4
60 – 64	9 483	4	42	15.8	112.4	154	2.6
65 – 69	8 557	1	12	1.6	82.9	197	0.5
70+	14 382	7	49	23.2	102.1	705	1.0
Total*	**540 748**	**116**	**21**	**17.9**	**25.7**	**2 859**	**4.1**

* Total includes unspecified age

Rates of violent death due to assault increase steadily from 15 years to 44 years after which there is a fluctuating decline. Overall mortality rate among assault victims is 21 per 100 000 person-years (95% confidence interval 17.9, 25.7). The 95% confidence intervals for assault rates for all age groups are wide because of the small number of cases that occurred

over the eight-year period. Examining the age groups individually, it is clear that the highest rate exists in the 50–54 year age group with a mortality rate of 82 per 100 000 person-years.

Table 10: Assault mortality rates by 15-year age groups, Agincourt 1992–2000

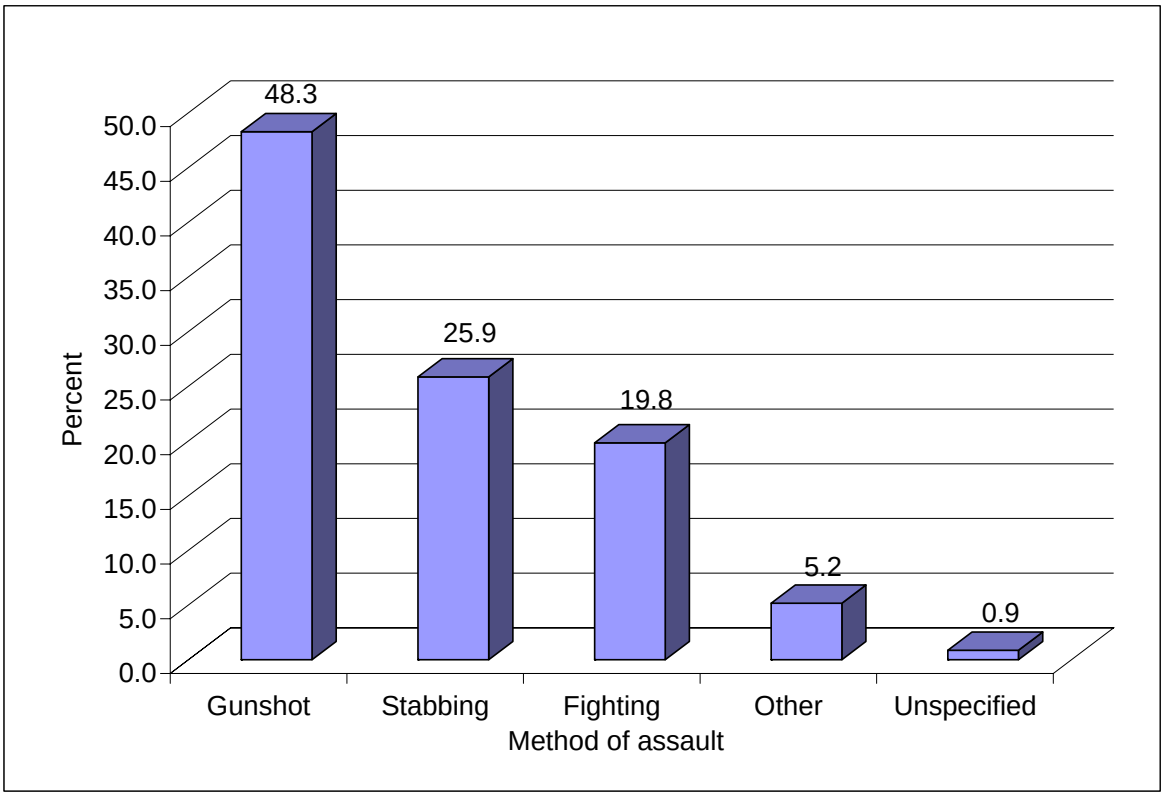
Age Group	Person-years (T)	Violent deaths (d)	Rate per 100 000 (λ)	95% Confidence interval		No. of deaths from all causes	Violent deaths as a percentage of all deaths
				Lower limit	Upper limit		
0 – 14	231 102	1	0	0.1	3.1	684	0.1
15 – 29	154 051	39	25	18.5	34.6	287	13.6
30 – 44	83 560	44	53	39.2	70.8	452	9.7
45 – 59	39 612	20	50	32.6	78.3	380	5.3
60+	32 422	12	37	21.0	65.2	1 056	1.1
Total*	**540 748**	**116**	**21**	**17.9**	**25.7**	**2 859**	**4.1**

* Total includes unspecified age

Based on the 15-year age groups, rates of violent death due to assault increase from 15 years to 44 years after which there the rate declines. The highest rate is observed in the 30–44 year age group. Of those aged 15-29 years, 13.6% died violently.

4.3.2 Method of Assault

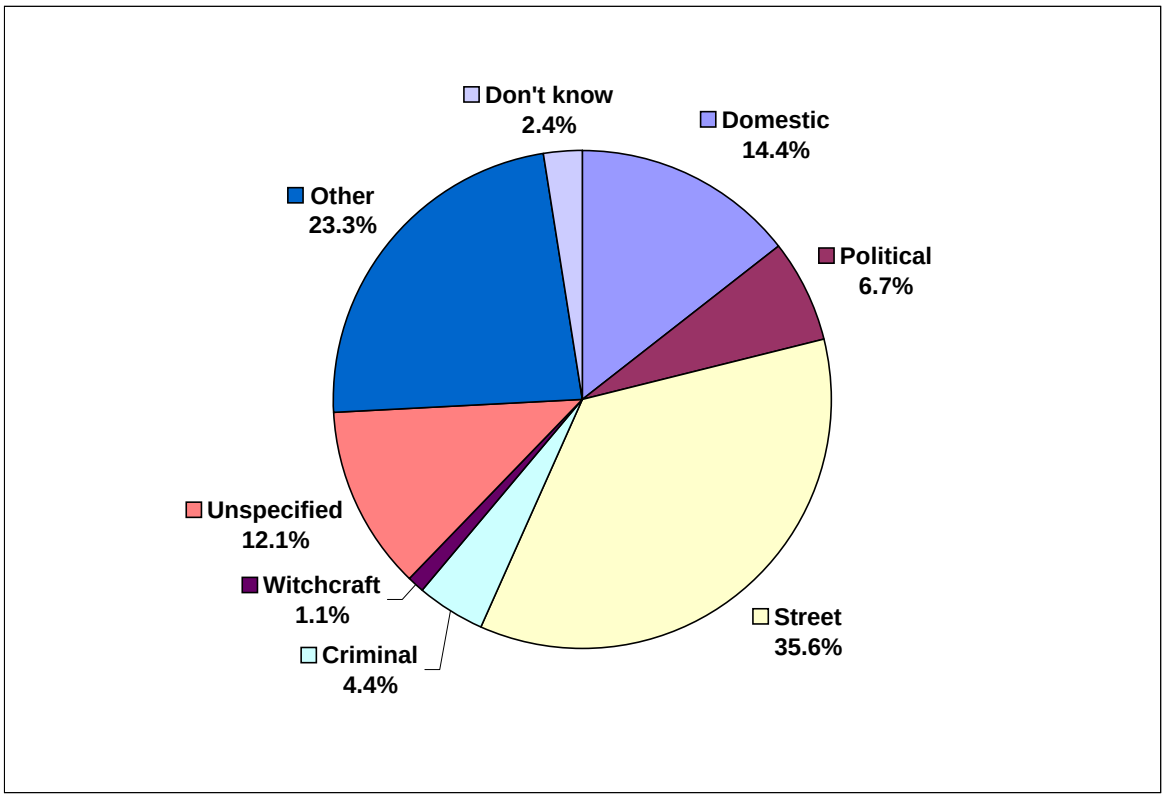
Figure 10: Violent deaths by method of assault, Agincourt 1992 – 2000



The method of assault was given in 109 of the 116 assault cases. Almost half of the cases were due to gunshots (48.3%), a quarter to stabbing (25.9%), a fifth resulted from fighting (19.8%) and 5.2% from other methods such as burning and poisoning. No method was provided for 0.9% of victims.

4.3.3 Type of Assault

Figure 11: Distribution of violent deaths by type of assault, Agincourt 1992 – 2000



Street violence accounted for 35.6% of all assault cases for the period 1992 to 2000, 14.4% of violent deaths were attributable to intra-family violence, 6.7% to political violence, criminal violence constituted 4.4% of the cases and assault attributed to accusations of suspected witchcraft practice in 1.1% of the victims. For 37.8% of the cases the type of assault was not known, of which 12.1% were unspecified, 23.3% recorded as "other" and 2.4% as "don't know".

4.4 Suicide Victims

Analyses in this section are based on the 54 suicide cases that occurred in the Agincourt area over the eight-year period, 1992 to 2000.

Mortality Rates

Table 11: Suicide mortality rates by sex and time period, Agincourt 1992–2000

Sex and time period	Person-years (T)	Deaths (d)	Rate per 100 000 (λ)	95% Confidence interval	
				Lower limit	Upper limit
Males	**259 667**	**40**	**15**	**11.3**	**21.0**
1992–1994	79 265	11	14	7.7	25.1
1995–1997	94 563	10	11	5.7	19.7
1998–2000	85 839	19	22	14.1	34.7
Females	**281 081**	**14**	**5**	**3.0**	**8.4**
1992–1994	86 644	2	2	0.6	9.2
1995–1997	102 352	4	4	1.5	10.4
1998–2000	92 084	8	9	4.3	17.4
Both sexes	**540 748**	**54**	**10**	**7.6**	**13.0**
1992–1994	165 909	13	8	4.6	13.5
1995–1997	196 915	14	7	4.2	12.0
1998–2000	177 923	27	15	10.4	22.1

Suicide mortality rates are higher for males than for females. Males experienced a rate of 15/100 000 person-years with the 95% confidence intervals ranging form 11.3 to 21.0 over the entire period, while among females there was a rate of 5/100 000 with 95% confidence intervals of 3.0 to 8.4 over the same period. A low rate is observed in the period 1995 to 1997 for males, while for females the rate has increased over time.

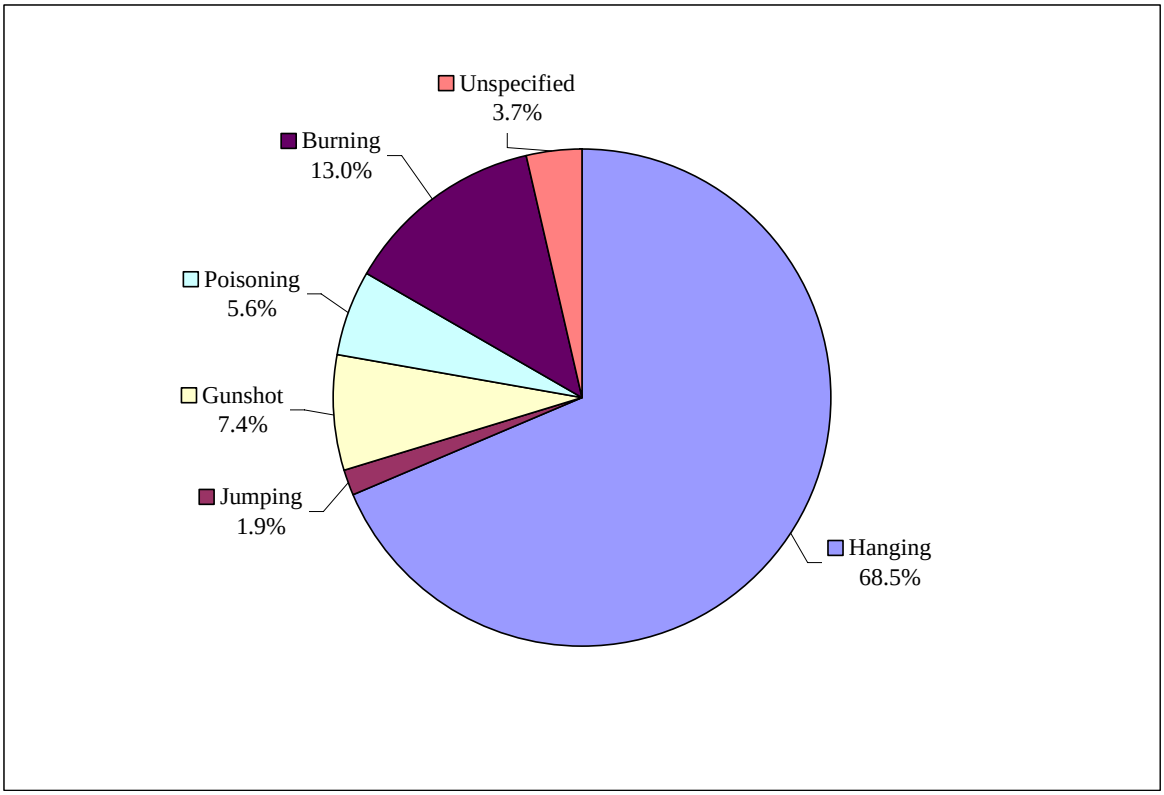
Table 12: Suicide mortality rates by age group, Agincourt 1992–2000

Age Group	Person-years (T)	Deaths (d)	Rate per 100 000 (λ)	95% Confidence interval		No. of deaths from all causes	% violent deaths/ all deaths
				Lower limit	Upper limit		
0–14	231 102	6	3	1.2	5.8	352	1.7
15–29	154 051	21	14	8.9	20.9	353	5.9
30–44	83 560	12	14	8.2	25.3	354	3.4
45–59	39 612	6	15	6.8	33.7	355	1.7
60+	32 422	9	28	14.4	53.3	356	2.5
Total	**540 748**	**54**	**10**	**7.6**	**13.0**	**357**	**15.1**

The highest suicide mortality rate is observed in the 60+ age group where the rate is 28/100 000 person-years with a 95% confidence interval of 14.4 to 53.3. The highest proportion (5.9%) of suicide cases occurs among teenagers and young adults aged 15–29 years. It should be noted that the total number of suicides (54) is too small for reliable estimates and results in wide confidence intervals.

4.4.1 Suicide Methods

Figure 12: Suicide cases by suicide method, Agincourt 1992-2000



Among suicide victims, hanging was the leading method of suicide, accounting for just over two thirds of cases (68.5%). The second most prevalent suicide method was burning (13.0%), followed by gunshot (7.4%), with poisoning accounting for 5.6% and jumping from a high place 1.9% of the cases. The method of suicide was unspecified in 3.7% of cases.

4.4.2 Suicide Method by Sex

Table 13: Suicide method by sex, Agincourt 1992–2000

Suicide method	Males		Females		Total
	Frequency	%	Frequency	%	
Hanging	30	81.1	7	18.9	37
Jumping	1	100.0	-	-	1
Gunshot	4	100.0	-	-	4
Poisoning	2	66.7	1	33.3	3
Burning	1	14.3	6	85.7	7
Unspecified	2	100.0	-	-	2
Total	**40**	**74.1**	**14**	**25.9**	**54**

Suicide by hanging was more common among males (81.1%) than females (18.9%), while suicide by burning was more common in females (85.7%) than in males (14.3%). Two thirds (66.7%) of the poisoning cases were among males and the remaining third among females. None of the female suicide cases were due to gunshot or jumping from high places.

4.4.3 Suicide Method by Age Group

Table 14: Suicide method by age group, Agincourt 1992–2000

Suicide method	0–14		15–29		30-44		45-59		60+		Total
	n	%	n	%	n	%	n	%	n	%	n
Hanging	6	16.2	12	32.4	7	18.9	6	16.2	6	16.2	37
Jumping	-	-	-	-	-	100.0	-	-	-	-	1
Gunshot	-	-	3	75.0	-	-	-	-	1	25.0	4
Poisoning	-	-	3	100.0	-	0.0	-	-	-	-	3
Burning	-	-	3	42.9	3	42.9	-	-	1	14.3	7
Unspecified	-	-	-	-	1	50.0	-	-	1	50.0	2
Total	**6**	**11.1**	**21**	**38.9**	**12**	**22.2**	**6**	**11.1**	**9**	**16.7**	**54**

Suicide by hanging was the most common method used by those aged 15 to 29 years (32.4%). All those aged 0 to 14 and 45 to 59 took their lives by hanging themselves. Suicide by burning was also more common among those aged 15 to 44 (85.8%) than in the other age groups. Three quarters (75.0%, n=3) of the gunshot suicide cases were aged 15 to 29 years.

4.5 Logistic Regression

Logistic regression analysis was done to establish associations between the risk factors and the outcome variable (violent deaths) which was dichotomised into assault and suicide. Variables that are believed to be risk factors for violent deaths were entered into a multinomial logistic regression model and the results are presented in Table 15.

Table 15: Logistic regression results, Agincourt 1992–2000

Parameter	Estimate	SE	Wald χ^2	OR	p-value	95% CI for OR	
						Lower limit	Upper limit
Intercept	-0.1309	0.4312	0.0921	-	0.7615	-	-
Gender	0.2791	0.4483	0.3877	1.322	0.5335	0.549	3.183
Age	-0.1423	0.3797	0.1405	0.867	0.7078	0.412	1.826
Alcohol	**1.2316**	**0.4540**	**7.3599**	**3.427**	**0.0067**	**1.407**	**8.342**
Substance	-0.9195	0.8532	1.1614	0.399	0.2812	0.075	2.123
Nationality	0.1589	0.4207	0.1426	1.172	0.7057	0.514	2.673
Migrant status	**1.2386**	**0.4489**	**7.6136**	**3.451**	**0.0058**	**1.432**	**8.318**

When all variables are added to the model, alcohol use and migrant status are both statistically significant at $p<0.05$ and the associations between violent deaths and other variables were not statistically significant. For instance, there seems to be some association between violent deaths and age as well as nationality where the ORs are greater than 1 (1.322 and 1.172 respectively) but these are not statistically significant at p=0.05.

Compared to those who did not use alcohol, alcohol users were 3.4 times more likely to die of assault. Migrants were 3.5 times more likely to die of assault than permanent residents.

Multivariate logistic regression was performed to identify the independent predictors using forward stepwise procedure where all risk factors with $p<0.05$ were included in the model and those with $p>0.05$ were excluded. The results of these analyses are presented in Table 16 below.

Table 16: Forward stepwise logistic regression results, Agincourt 1992–2000

Parameter	Estimate	SE	Wald χ^2	OR	p-value	95% CI for OR	
						Lower limit	Upper limit
Intercept	0.0114	0.2289	0.0025	-	0.9604	-	-
Alcohol	**1.1291**	**0.3979**	**8.0534**	**3.093**	**0.0045**	**1.418**	**6.746**
Migrant status	**1.3740**	**0.4186**	**10.7752**	**3.951**	**0.0010**	**1.740**	**8.975**

Alcohol use and migrant status are found to be associated with violent deaths. According to the best fit model, alcohol users are 3.1 times more likely to die violently than non-alcohol users and migrants are almost 4 times more likely to die violently than non-migrants.

4.6 Death Registration

Table 17 gives an indication of how many of the violent deaths were registered with the Department of Home Affairs.

Table 17: Violent deaths by death registration, Agincourt 1992–2000

Death Registered	Frequency	Percentage
Yes	105	61.8
No	65	38.2
Total	170	100,0

More than 38% of violent deaths were not registered. This means that if the VA technique had not been employed the violent deaths in the area would have been underestimated. Even in the cases where cause of death was recorded, VAs were conducted so that the comparison could be made with the cause of death appearing on the death certificates, as a method of validation.

5.0 DISCUSSION

The study discusses the levels of violent deaths among residents of Agincourt, a rural village in the north-east of South Africa. It considers violence-related mortality rates according to age, sex, nationality and residence status distinctions since these variables are believed to be risk factors. Logistic regression analysis is performed to assess associations between the risk factors and violent acts.

In this report, violence-related mortality includes suicide and assault as coded in the International Classification of Diseases version 10 (ICD-10)[35] - Codes X60 – X84 for suicide and X85 – Y09 for assault.

5.1 Magnitude of the problem

Violence accounted for 5.9% (170/2 859) of deaths from all causes in the Agincourt area between 1992 and 2000. Of the 170 violent deaths 68.2% were due to assault while the remaining 31.8% were suicides. According to Kahn (1999)[5], external causes (violent and accidental) were amongst the leading causes of mortality in Agincourt between 1992 and 1995, accounting for 42% of deaths from all causes. There has been an increase in the rate of violent deaths over the eight-year period, though the increase is not statistically significant, which is indicative of no clear trend over time.

5.2 Age and Sex patterns

The results of this study show that males are at higher risk for fatal assault and suicide than females. In terms of age differentials, youth and young adults (aged 15 to 24 years) are at higher risk than in middle aged adults. This is in agreement with results from other studies[5, 38] where young (teenagers and young adults) males have been found to be more vulnerable to

violence than older males. When comparing the violence mortality rates between sexes, the same picture is seen where males experienced a 5-fold higher rate than females. In terms of age-specific mortality rates the rate is highest among middle-aged adults (30-44 and 50–54 year olds). These findings underline the need for sex- and age-specific violence intervention programmes.

5.3 Differences by Nationality and Migration Status

The study found that a large proportion of victims of violent death in the study area were South African citizens (73%). Despite lower employment socio-economic status of Mozambicans compared to South Africans, rates of violent deaths are lower. This is in contrast to a number of studies that have identified poverty, high unemployment or community-wide environmental stressors as possible predictors of when and where violence and victimisation may occur.[39, 40] The lower proportion of violent deaths among Mozambicans may be due to underreporting of their nationality, feeling vulnerable because of their lack of legal status in South Africa. The finding may simply be a true reflection of the fact that there is less violence among Mozambicans than among their South African counterparts, however. The Canadian Department of Justice has noted a significant link between poverty and increased incidence of domestic violence.[41] While violence levels appear to be higher among South Africans than among self-settled former Mozambicans, the observed difference between these two populations is not statistically significant.

About 60% of violent deaths occurred among permanent residents[b]. There is a statistically significant difference between levels of assault-related deaths among migrants and permanent residents. Migrants may be more vulnerable to violence than permanent residents since they are not stable, spending at least half their time away from home, working or in search of a job. The risks of assault may be inherent in the environment that migrants move to – since migrants are separated from their families, they may find themselves taking more alcohol or being involved in drugs and end up being involved in violent behaviours.

5.4 Assault

In this study gunshots and stabbing were found to be the most common methods of assault. If the notion of more peaceful South African rural areas is correct, one would expect that firearm possession would be low. This appears not to be the case. Gunshot cases might be attributable to the fact that guns are easily accessible to the South African public, unlike in a Danish community where gun ownership is restricted to hunters, police and military officers, and firearms are rarely used in violent encounters[2]. It also seems that the public tend to carry sharp objects, since stabbing is the second most common method of assault. The findings of this study confirm what has been found in existing literature.[42, 43]

Street and intra-family violence constitute the main types of violence occurring in the Agincourt community. This situation is likely to be aggravated by the use of alcohol and possibly by substance abuse. These factors are believed to be associated with violent behaviour. [44] Alcohol is a significant risk factor in this study. In addition, many victims in this study died over the weekend when people tend to drink more. However, possible underestimation of alcohol is a potential limitation to fully understanding this important risk factor. The important role of alcohol in violence in Agincourt is supported by other studies

[b] 'Permanent residents' are the people who stayed in the Agincourt rural village for at least six months of the year preceding the survey update. 'Migrants' are those who stayed in the rural area for less than 6 months of the year preceding the survey update.

conducted in South Africa as well as elsewhere.[44, 42, 45] Victims of violence in the Western Cape were more likely to be intoxicated at the time of death than those from KwaZulu Natal and Gauteng provinces[20]. A fuller understanding of the role of alcohol in violent attacks in Agincourt would require further research using different approaches.

The high level of domestic violence suggests that women should be made aware that this phenomenon occurs in their community and that they must speak out about it in order to help prevent deaths occurring as a result of such violence. In a Zimbabwean study,[46] women believed that wife beating was "OK" and that it was an acceptable way of resolving conflict. If a similar mindset exists in the Agincourt community, it would need to be changed. In some communities, possibly in Agincourt as well, victims who report violence are stigmatised.

An interesting finding is that 25.3% of the victims died at the assault site, indicating that the injuries were so bad that there was no time to get the victim to a hospital. This might be attributable to the fact that most of the deaths resulted from gunshots (48.3%). Comparing the proportion of victims who died at home (32.4%) to the proportion who died in a health facility (15.3%), one realises that a sizeable proportion died at home and wonders if poverty plays a role in this observed picture. People might not be able to afford to go to a health facility for medical attention after a violent encounter. Perhaps they also fear police/criminal investigation.

5.5 Suicide

Suicide accounted for 1.8% of deaths from all causes and 30% of violent deaths. Suicide mortality rate is highest among the elderly (60 years and above). Suicide was more common among males than among females, though the rate of suicide increased over the eight-year period among females. This is in agreement with the findings by the state of Rio Grande do Sul, Brazil.[47] Of concern are suicides of children under the age of 15 years (1.2%). This might be associated with the HIV/AIDS pandemic as the parents to these children may have died from HIV/AIDS, leaving their children to fend for themselves. These children may struggle to make ends meet, become depressed and are thus driven to take their own lives. In order to understand why children commit suicide, more research will need to be done.

Suicide by hanging was the most common method by which people took their lives. Other methods included burning and gunshot which accounted for 13.0% and 7.4% of the cases respectively. Suicide by hanging was more common among males, whilst suicide by burning was common among females. Suicide by gunshot only occurred among males. Other studies also found hanging to be more common than other suicide methods. [21, 46]

5.6 Violence Prevention

Violence is not an inevitable part of human life. It is a preventable problem that is the product of a complex array of modifiable psychological, social and environmental factors. Prevention efforts must be multi-faceted in their approach and address the variety of individual, relational, community and societal variables involved. Preventive measures are needed at all levels and in all sectors of society. Such efforts depend on community partnerships and collaborations and necessitate addressing other disparities and inequalities in society, such as poverty, gender and racial discrimination, and unequal social opportunities.

According to "A Conceptual Framework for Violence Prevention",[48] the first step in dealing with violence is to categorise it to facilitate a systematical understanding of violence and to develop sustainable and appropriate strategies for violence reduction. Violence is divided into three categories: political violence, economic violence and social violence. Based on the differing motivations of the perpetrators of violence, the categorization highlights the appropriate approaches to violence reduction. The framework also assists in explaining why different violence reduction interventions are applicable to different types of violence because one intervention may be appropriate for one type of violence but not for others.

The goal of prevention should be to empower individuals and communities to approach violence holistically and eliminate the associated feelings of apathy and powerlessness. In the area of violence there has been a lack of primary prevention efforts – programmes designed to prevent violence before it happens – especially ones designed at the community and societal levels.[8, 49]

Public health interventions are traditionally categorised according to three levels of prevention: primary prevention, secondary prevention and tertiary prevention. Primary prevention involves approaches that aim at preventing violence before it occurs, secondary prevention entails approaches that focus on the more immediate responses to violence, such as pre-hospital care, emergency services or treatment for sexually-transmitted diseases following a rape, while tertiary prevention involves approaches that focus on long-term care in the wake of violence, such as rehabilitation and reintegration, and attempts to lessen trauma or reduce the long-term disability associated with violence.[8]

Some of the strategies outlined in the World Report on Violence have been implemented in the United States and therefore might not be relevant to developing countries due to resource constraints. However, they can be modified to suit the country situation. Some of them can also work in the rural north-east of South Africa, if implemented through existing community structures, following a conceptual framework for violence reduction.

For Agincourt, the violence reduction strategies should be focused on teenagers, particularly boys, and young adults. These can include: establishing recreational facilities to keep young people busy, away from violent activities; providing career guidance so that kids have goals and something to strive for in life; creating employment opportunities in the area to try and reduce poverty; improving social welfare systems so that a large proportion of the population has access to social grants; restricting access to firearms which are commonly associated with homicide and suicide; and reducing the availability and use of alcohol. Increased alcohol prices can reduce levels of violence- in Diadema, Brazil, prohibiting the sale of alcohol after 23h00 helped prevent an estimated 273 murders over a 24-month period.[50] Provision of basic services and infrastructure such as housing, street lighting and electricity can also help reduce the individual's risk of victimisation, especially among vulnerable groups.

It is imperative that focus is given to violence prevention programmes among teenagers and young adults to deter them from involvement in violent acts as they grow older. Emerging violence suggests that patterns of violence and victimization may develop in early adolescence, and soon become difficult to reverse. Because of this, boys and young men need support systems and safe places to develop culturally specific concepts of manhood that include non-violence**.** Since young people are still connected to institutions that make universal prevention approaches possible through school-based programmes, it is easier to implement interventions to help learners reject violence. It is more difficult to do the same for

those not connected to such institutions. Failure to protect youth from violence, and failure to give them assistance in dealing with the trauma when they witness or experience violence, is particularly harmful.[41]

Communities also need to be educated about violence, with more emphasis being put on street and intra-family violence while not neglecting other forms of violence. Men should be incorporated in the focus group discussions dealing with violence, especially intra-family violence. Laws on the carrying of sharp objects should also be enforced in a more rigorous manner in order to prevent unnecessary injury and loss of life. Violence prevention strategies should include talks with communities with a view to reducing levels of poverty through job creation, school-based programmes, local newspapers, and using the "Love Life" structures that exist within the Agincourt area to educate youth about violence and its consequences. Communicating with the local communities is, however, not necessarily a good practice per se and does not lead to reductions in violence but it is rather important as an adjunct to violent-prevention strategies.

According to Rosewater, intra-family violence is related to school success, ability to connect to the labour force, delinquent behaviour, and substance abuse by youth[41]. Evidence suggests that violence is one of the key barriers preventing many young people from forming lasting relationships, feeling good about themselves, and participating productively in school or the workforce.

5.7 Data Availability

According to Levin, research done in many different parts and settings of the world has found an association between domestic violence and poverty, male unemployment, and status differences between partners.[51] However, in South Africa, according to Katzenellenbogen,

Joubert and Abdool Karim[26], it is not possible to analyse mortality data according to socio-economic class because of the fact that national mortality data do not contain useful socio-economic variables. Another problem that South Africa and other developing countries face is that of under-reporting and misclassification of mortality information. In this study, socio-economic indicators were not available. This aspect requires further research in the future. .

It has been argued in many studies that available information is not always reliable.[2, 3, 5, 52] This suggests that the South African public health information system is poor and that in order for it to be improved accurate information must be collected as this forms an integral part of public health planning. Because of such discrepancies the Agincourt Health and Demographic System was set up to collect population-based information in a geographically well-defined area as well as to determine causes of death data through the verbal autopsy technique. If this could be extended to other areas, the information systems in South Africa could be significantly improved. However, this would require a great deal of effort and considerable resources to make it a reality.

If people in the study areas are to access and respond to information on crime and violence prevention, they will have to accept that they are indeed faced with a serious problem in the form of violence. Only then can information on how to combat violence, without interfering with their cultural beliefs and practices, be meaningfully provided to them.

5.8 Limitations of the study

This study has some limitations: the sample size was very small (n=170) for reliable estimates; Person-years lived were only available by age and gender and it was, therefore, not possible to establish the violence mortality rate by residence status and migrant status; and alcohol use by victims of violence might have been underreported, particularly through VAs.

6.0 CONCLUSION

Violence is a major public health problem that is claiming many lives. As such, it needs to be attended to as a matter of urgency.

The results of this study suggest that violence is a problem in rural South Africa. The results also indicate the gender and age groups most affected, the methods and types of assault most common in the area, as well as the trends over the eight-year period of 1992 to 2000. This information indicates the urgent need for programmes aimed at preventing violence. It has important implications for future research and policy making in terms of developing violence prevention strategies that target specific age and gender groups. Caution should be taken, however, not to interfere with people's norms, beliefs and culture, but rather as far as possible to develop programmes taking these into account.

Experiences of violence are especially prevalent among teenagers and young male adults. In addition, many of the most vulnerable adolescents and young adult victims of violence are themselves parents. Thus, this age group demands much more attention in order to allow them to raise their children in a non-violent environment and to enable their children to grow into anti-violent adults. According to the World Health Organisation,[1, 8] parents who were exposed to violence while they were children tend to be violent themselves.

Violence prevention holds the promise of keeping future generations of men, women and children safe from violence. It requires more research, greater attention and many more resources than it receives today.

This study has identified some risk factors associated with violent behaviour but there is an urgent need to identify more risk factors and do more research around the identified ones in

order to better understand what leads to this type of behaviour. Once this has been established, problem-specific strategies can be proposed. Communities need to be involved at all levels to guard against strategies simply being imposed on them. They should instead be generated with their involvement. With good information and an inclusive process, violence prevention strategies can become more targeted and, as a result, more likely to have an impact.

APPENDICES

APPENDIX A

CENSUS FORM

Sequence Nr: 999

Census Form

Agincourt Health and Population Unit Census 2002

Date of Visit: d d m m y y y y

Number of: Pregnancy Outcomes: Deaths: Migration IN: Migration OUT: Maternity Histories: Temporary migrants: CCG form done:

Last respondent: 118076

Last Visit: 01-Aug-01

Fieldworker:

eq#	Name Surname	Gender	DOB	Mother Id/Seq#	Mother Status	Husband Id/Seq#	H/Head Relation	Refugee	Res Months	Res Status	Highest Education	At Date	Highest current Ed	Last Event	Last Child Name	Last Child DOB
3076	Elliot	M	07/05/1952		V		T	N			5	29/09/1997				
3077	Emelie	F	12/08/1957		B	118076	W	N			B	29/09/1997			Rachel Ubisi	26/04/1992
3078	Deliwe	F	03/01/1979	118077	H	N	D	N			8	29/09/1997				
3079	Reason	M	01/03/1982	118077	H		S	N			5	29/09/1997				
3080	Freedom	M	26/05/1986	118077	H		S	N			1	29/09/1997				
2884	Rachel	F	26/04/1992	118077	H	N	D	N			N	29/09/1997				
2885	Reinal	F	26/04/1992	118077	H	N	D	N			N	29/09/1997				

members:

nents:

her Status
- ame Household
- ame Village
- gincourt Area
- BRidge Area
- lsewhere
- ied

Husband Id/Seq#
Number, or
N=Never married
M=Married, husband not in hhold
W=Widowed
S=Separated
D=Divorced

Household Head Relation
M=Mother
F=Father
B=Brother
Z=Sister
S=Son
D=Daughter
H=Husband
W=Wife, W1=First W2=Second, etc
U=Unrelated
T=Household Head (Tatane)
R=Related indirectly by marriage

Res Status
P=Permanent
V=Visitor
M=Migrant
O=Other

Education
N=None 3=Std 3 8=Std 8
A=Sub-A 4=Std 4 9=Std 9
B=Sub-B 5=Std 5 0=Std 10
1=Std 1 6=Std 6 H=Higher
2=Std 2 7=Std 7

Refugee
Y=Arrived before 1993 from Mozam.
M=Arrived after 1992 from Mozam.
O=Citizen other than RSA/Mozam.
N=South African

Last Event
N=No Event
P=Pregn. Outc.
D=Death
I=In Migration
O=Out Migration

APPENDIX B

VA QUESTIONNAIRE

AGINCOURT HEALTH AND POPULATION PROGRAMME

VERBAL AUTOPSY QUESTIONNAIRE

NO RESPONDENT _____ **REASON** _____

Village: _____ Gender: Male / Female

Household: _____ Age: _____

FW initials: _____ Refugee: Yes / No

Date of Int.: ____ /____ / ____ Date of death: ____ /____ / ____
dd / mm / yy dd / mm / yy

Day of death: _____ Don't know ___
Mon / Tues / Wed / Thurs / Fri / Sat / Sun

Xana una xona xitifiketi xa rifu kumbe fomo ya rifu ? **INA___ EE___ AT ___**
Do you have a death certificate or death registration form?

If yes, DATE OF DEATH recorded on form: ____ /____ / ____
dd / mm / yy

CAUSE OF DEATH recorded on form: _____

_____

Contributing causes: _____

Underlying causes: _____

If yes, but form unavailable, where can it be found? _____

_____

Muhlamuli: manana bava kokwana nuna/nsati makwavo n'wana van'wana
Respondent: mother father grandma spouse sibling child other

_____

Xibangelo (Hi ku bona ka n'wina / ndyangu) _____
Cause (as declared by family)

<<>> *[To FW: Ask only if deceased did not die at clinic or hospital]*

Xana mufi u yisiwile e xibedhlele kumbe ekliniki evuvabyini bya yena?
Was the person taken to clinic or to hospital during this illness?

INA ____ EE ____

Loko mi nwi yisile, mi n'wi yise kwihi :_____
If yes, where (name):

Hi siki rihi : ___ / ___ / ___
Date: d d / m m / y y

<<>> *[If taken to clinic or hospital more than once, please write as many dates as possible]*

XANA MUFI U LOVE KA NGOZI **INA ____ EE ____**
Was this an accident?

<<>> *[To FW: if yes, complete the open history on page 3; page 4 for an accident; and sections 21, 22, 23, 24.]*

Loko mufi angalovanga kangozi, u vabye nkarhi wa ku fika kwihi? (masiku, mavikhi, tinhweti, malembe) If this was not an accident, what was the duration of the illness?

_____

Xana ku ve na vuvabyi byin'wana ke handle ka lebyi byi nga vanga rifu?
Was there any previous illness? Ina ___ Ee __

Loko kuri ina, hlamusela _____
If yes, describe

_____

Xana ka vuvabyi lebyi bya vumbhiri, uvabye ku fikela rini? _____
Duration of this illness

History of disease / accident leading to death:

Hlamusela leswi nga humelela hi nkarhi kuvabya ka mufi kumbe ngozi le yi yi nga vanga rifu. Loko aku ri na swikombiso swa mavabyi swo hlawuleka, kombela muhlamuri ku hlamusela swi kombiso leswi. Eka vuvabyi byi n'wana na byi n'wana kombela muhlamuri kuri a boxa hi ku kongomisa ku pfuneka loku nga kumiwa hi mufi hi ku landzelelana ka le swi nga fambisa swona.

Give the chronology of events that occurred during the illness period (or after the accident) leading to death. In case of special symptoms , ask the respondent to describe or mimic the symptom. Always specify the treatment received and the order in which events occurred.

<<>> [To fieldworkers: do not ask any specific questions. You may guide the respondent with questions such as: "what happened next", "is there anything more to tell", "what happened first" etc.]

COMPLETE IN THE CASE OF AN ACCIDENT ONLY

If a CAR ACCIDENT:

Xana nghozi ya movha yi humelele kwihi?
Where did the car accident occur?

EDOROBENI urban _____
EMATIKO XIKAYA rural _____
KUNWANA other _____

Xana mufi a ri
Was the deceased

MUFAMBI HI MILENGE a pedestrian _____
DIRAYIVHA the driver _____
MUKHANDZIYI a passenger _____

Xana mufi a ri eku nweni ka byalwa hi nkarhi lowu ku nga humelela nghozi? Ina ___ Ee ___ AT ___
Had the deceased been drinking alcohol at the time of the accident?

Loko mufi a nga ri yena dirayivha, xana dirayivha a ri eku nweni ka byalwa hi nkarhi wa nghozi?
If the deceased not the driver, was driver drinking alcohol at the time of the accident? Ina ___ Ee ___ AT ___

Xana a ku ri muxaka muni wa movha lowu swi nga endleka eka wona?
What vehicle was involved?

THEKISI taxi _____
MOVHA WA KARI private car _____
MOVHA WA VHENE bakkie _____
UNWANA other _____

Xana mufi a ambarile mabandhi ya vuhlayiseki ke? Ina ___ Ee ___ AT ___
Was the deceased wearing a seat belt ?

Xana i ndhawu yini ya miri leyi yi vavisekeke? What part(s) of the body were injured?

_____

If an ASSAULT:

Xana mufi a ri e ku nweni ka byalwa hi nkarhi lowu wa ku biwa ka yena?
Had the deceased been drinking alcohol at the time of the assault? Ina ___ Ee ___ AT ___

Xana lava va n'wi xaniseke a va ri eku nweni ka byalwa hi nkarhi wa kona?
Had the attackers been drinking alcohol at the time of the assault? Ina ___ Ee ___ AT ___

Xana timbanga ti vangiwile hi
Were the injuries caused by

KU TLHAVIWA stabbing _____
KU DUVULIWA gunshot _____
KU LWISANA fighting _____
SWIN'WANA other _____

Xana ku lwa loku a ku ri ka
Was the violence

XINDYANGU domestic _____
TIPOLITIKI political _____
EXITARATINI street _____
MAPHORISA police _____
SWIN'WANA other _____

Xana i ndhawu yihi emirini leyi yi vavisekeke? _____
What part(s) of the body were injured?

For ALL accidental deaths :

Xana mufi u lovile eka ndhawu leyi nghozi yi humeleleke kona. Ina___Ee_____AT_____
Did the person die at the site of the accident / assault (i.e. immediately) ?

Loko ku ri ee xana u hete tiawara/masiku mangani anga si lova e ndzhaku ka nghozi? _____
If no, how many hours / days after the accident did he/she die?

****** IF AN ACCIDENT, GO TO PAGE 19, QUESTION 21 ******

****** IF NOT AN ACCIDENT, CONTINUE ON THIS PAGE ******

<<>> [To fieldworkers:
1) Circle the answer given by respondent for Ina, EE, Andzi tivi.
2) If the answer is INA, ask all the questions in the section.
3) If the answer is Ee or Andzi tivi, go directly to the next section (the next main question)]

---

1. KU HISA KA MIRI
FEVER /HOT BODY

INA EE ANDZI TIVI

Nkarhi (masiku, mavhiki, tinhweti) _____
Duration (days, weeks, months)

A swi sungule rini _____
When did it start

Swi herile rini _____
When did it stop

Ku hisa ka miri a ku vuyavuya _____
Fever was recurrent / persistent

Ku rhurhumela na ku hisa hinkarhi wunwe (mathutwana) Ina ___ Ee ___ AT ___
Chills

2. KU CHULUKA — **INA EE ANDZI TIVI**
DIARRHOEA

Nkarhi (masiku, mavhiki, tinhweti) _____
Duration (days, weeks, months)

A swi sungule rini _____
When did it start

A swi herile rini _____
When did it stop

Xana mufi aa chuluka swa mati ? Ina ___ Ee ___ AT ___
Were the stools very liquid?

Xana thyaka ari huma na matheketheke ke ? Ina ___ Ee ___ AT ___
Mucous in stools?

Xana ngati a yi huma ke ? Ina ___ Ee ___ AT ___
Blood in stools?

Xana mufi a tshamela ku chuluka (ku tlula ka tsevu hi siku) Ina ___ Ee ___ AT ___
Were stools very frequent?

Ku oma ka nomo / to rha leri kulu Ina ___ Ee ___ AT ___
Dry mouth / very thirsty

Mahlo yo nghena endzeni Ina ___ Ee ___ AT ___
Sunken eyes

Ku vuna ka nhlonge Ina ___ Ee ___ AT ___
Loss of skin elasticity

<<>> *[Ask the next question only if the deceased was a child less than two years of age]*

Rhavarhava yo nghena endzeni Ina ___ Ee ___ AT ___
Sunken fontanelle

---

3. KU HLANTA — **INA EE ANDZI TIVI**
VOMITING

Nkarhi (masiku, mavhiki, tinhweti) _____
Duration

U hlante rini hi nkarhi wo va bya _____
When during illness

Muhlovo wa mahlanta _____
Colour

Mahlanta a ma hlangane ni ngati ke ? Ina ___ Ee ___ AT ___
Was there blood in the vomit?

4. A RHURHUMELA, NHAMU YI OMILE, KU OMA KA MIRI, MIRI WU KHOTSEKELA ENDZHAKU.

SPASM, CONVULSIONS, STIFF NECK, STIFF BODY, BODY BENT BACKWARD

INA EE ANDZI TIVI

Hlamusela leswi nga humelela _____
Describe what happened

_____

_____

Xana a swi humelela ro sungula ka mavabyi lawa? Ina ___ Ee ___ AT ___
Did it happen for the first time during this illness?

Xana swi humelele ka ngani? _____
How many times did it happen?

Nkarhi wa xiphemu xin'wana ni xin'wana. _____
Duration of each episode

Xana swi endleke rini hi nkarhi wa vuvabyi _____
When during illness

Xana u huwelerile? Ina ___ Ee ___ AT ___
Did he/she cry out ?

Ku rhurhumela ka miri Ina ___ Ee ___ AT ___
Spasm (uncontrolled sudden movements)

Xana nhloko a yi jikele endzhaku Ina ___ Ee ___ AT ___
Head bent backward

Xana miri a wu omile u tlhela wu govekela endzhaku Ina ___ Ee ___ AT ___
Body stiff and bent backward

Xana milenge a yi omile na yi ololokile kumbe yi tiya na yi govekela endzhaku.
Legs stiff and straight / bent Ina ___ Ee ___ AT ___

Mavoko a ma oma na ma ololokile kumbe govekile Ina ___ Ee ___ AT ___
Arms stiff and straight / bent

Mavoko ma endle swi bakele Ina ___ Ee ___ AT ___
Clenched hands

Xana tinhlaya ati omile (anga swi koti ku dya) Ina ___ Ee ___ AT ___
Clenched jaws (could not eat)

Xana mufi a tsakamisa Ina ___ Ee ___ AT ___
Urinating during episode

Xana mufi a luma ririmi hi karhi wa vuvabyi Ina ___ Ee ___ AT ___
Biting the tongue during episode

Xana a huma khuvi hi nomo — Ina ___ Ee ___ AT ___
Frothing at the mouth

Rhavarhava a yi pfimbile (loko n'wana ari hansi ka malembe mambirhi) — Ina ___ Ee ___ AT ___
Swollen fontanelle

Xana mufi a ri na mavabyi ya switshetshela? — Ina ___ Ee ___ AT ___
Was this epilepsy?

Loko kuri ina, xana mufi u ve na swi tshetshela nkarhi wo tani hi kwihi?_____
If yes, for how long did the person have epilepsy?

U tshunguriwile? — Ina ___ Ee ___ AT ___
Was the person treated?

Loko a tshungriwile kwihi? (xibedlhele, kliniki, n'angeni) _____
If yes, where? (hospital, clinic, traditional healer)

5. KUTIKERIWA KU HEFEMULA — INA EE ANDZI TIVI
DIFFICULT BREATHING

Nkarhi (masiku, mavhiki, tinhweti) _____
Duration

Swi sungule rini _____
When did it start

Swi herile rini _____
When did it stop

Ku hefemula hi ku hatlisa — Ina ___ Ee ___ AT ___
Rapid breathing

Ku tikeriwa ku hefemula — Ina ___ Ee ___ AT ___
Difficult breathing (suffocating)

Ku hefemula a ku ri na huwa xana — Ina ___ Ee ___ AT ___
Breathing was noisy

Tinhompfu ta yena a tipfuleka-pfuleka xana — Ina ___ Ee ___ AT ___
Nostrils flaring

Xana xifuva xa yena a xi vuyela endzeni — Ina ___ Ee ___ AT ___
Chest indrawing

Xana mufi a helela hi moya loko a etlela a ololokile ke? — Ina ___ Ee ___ AT ___
Was the person more breathless when lying flat?

Xana a ku ri na ku tikeriwa ka ku hefemula loko a tshamile kumbe wisile? — Ina ___ Ee ___ AT ___
Was there difficulty breathing while the person was sitting or resting?

Xana a ku ri na ku tikeriwa ka ku hefemula loko ari eku fambeni ke? — Ina ___ Ee ___ AT ___
Was there difficulty breathing when the person was walking?

Xana a tsandzeka ku famba hikokwalaho ka ku tikeriwa ka ku hefemula? — Ina ___ Ee ___ AT ___
Was the person unable to walk because of difficulty breathing?

6. KU KHOHLOLA **INA EE ANDZI TIVI**
COUGH

Nkarhi (masiku, mavhiki, tinhweti) _____
Duration

Swi sungule rini _____
When did it start

Swi herile rini _____
When did it stop

Xana mufi a khohlola na vusiku Ina ___ Ee ___ AT ___
Coughing at night

A phela marha loko a heta Ina ___ Ee ___ AT ___
Spitting after cough

Loko ku ri ina, a ku ri na xikhohlola sputum ___ froth _____
If yes, sputum (mucus), froth, blood, bad smell?
blood_____ bad smell ___

A helela hi moya loko a heta ku khohlola Ina ___ Ee ___ AT ___
Losing breath after cough ?

Xana a hlanta loko a khohlola? Ina ___ Ee ___ AT ___
Vomiting after cough?

A ku ri mukhuhlwana wa xi mbyembye Ina ___ Ee ___ AT ___
Was this whooping cough?

Xana mufi u love masiku mangani endzhaku ka ku sungula ka ku khohlola?
How many days after the onset of the cough did the person die? _____

Xana a dzuka nyuku kutlurisa na vusiku? Ina ___ Ee ___ AT ___
Night sweats?

Xana vuvabyi lebyi aa kuri TB? Ina ___ Ee ___ AT ___
Was this TB?

Loko kuri ina, xana atshunguriwile exibedlhela? Ina ___ Ee ___ AT ___
If yes, was it treated at hospital?

<<>> *[To FW : ask only if the deceased is a child less than 5 years.]*

Xana manana kumbe tatana wa mufi u ve tshama a karhatiwa hi T.B. ke? Ina ___ Ee ___ AT ___
Has the deceased child's mother or father ever had TB?

Loko ku ri ina, xana mufi a tshama eka muti un'we ni mutswari loyi a nga na T.B ke? Ina ___ Ee ___ AT ___
If yes, did the child live in the same house as the parent with TB?

7. SWIRHUMBANA **INA EE ANDZI TIVI**
RASH

Nkarhi (masiku, mavhiki, tinhweti) _____
Duration

Swi sungule rini? _____
When did it start?

Swi herile rini? _____
When did it stop?

A swiri ka swirho swihi swa miri? _____
Where on the body?

A swi sungule ka swirh swihi swa miri? _____
Where did it start?

A swi sungule nkarhi wun'we kumbe a swi nga humelanga ehenhla? _____
Flat or raised

A swi ri makulu kumbe a ya ri matsongo? _____
Large or small

Aswi ri swa muhlovo wihi? _____
What colour was the rash?

Xana swirhumbana a swi ri na mati? Ina ___ Ee ___ AT ___
Contained clear liquid?

Xana swirhumbana a swi n, wayisa? Ina ___ Ee ___ AT ___
Itchy?

Xana aswi vavisa ke? Ina ___ Ee ___ AT ___
Was the rash painful?

Xana swirhumbana a swi horile mufi anga si lova? Ina ___ Ee ___ AT ___
Healed before death?

Xana nhlonge ya mufiayi dzuvuka? Ina ___ Ee ___ AT ___
Desquamation of skin?

A ku ri swimungwamungwana? Ina ___ Ee ___ AT ___
Was this measles?

Loko ku ri ina, xana mufi u love masiku mangani endzhaku ka ku sungula ka mabundzu?
If yes, how many days after the rash did the death occur?

_____

8. SWILONDZ / KU TSHWA **INA EE ANDZI TIVI**
WOUNDS / BURNS

A swi ri kwihi emirini _____
Localisation

A ku ri na vupfu Ina ___ Ee ___ AT ___
Was it infected?

---

9. KU HUMA KA NGATI KA SWIRHO SWA MIRI
BLEEDING FROM ANY SITE INA EE ANDZI TIVI

Ngati a yi huma kwihi ? _____
Localisation

Yi hume ka ngani? _____
How often?

A swi humelela rini enkarhini wa vuvabyi? _____
When during illness?

---

10. KU PFIMBA / KU PFIMBA KA MIRI / KU PFIMBA KA KHWIRI
OEDEMA / SWOLLEN BODY / SWOLLEN ABDOMEN (BELLY)

INA EE ANDZI TIVI

Nkarhi(masiku, mavhiki, tinhweti) _____
Duration

A swi sungule rini? _____
When did it start?

A swi herile rini? _____
When did it end?

<<>> *[To FW: mark more than one answer if necessary]*

A swi ri ka swirho swihi swa miri?
What parts of the body?

mahlakala (ankle) _____ xikandza (face) _____ khwirhi (abdomen) _____
tintiho (fingers) _____

11. KU TIKERIWA LOKO A TSAKAMISA **INA EE ANDZI TIVI**
DIFFICULTY IN URINATING

Nkarhi (masiku, mavhiki, tinhweti) _____
Duration

A swi sungule rini? _____
When did it start?

Swi herile rini? _____
When did it end?

A twa ku vava loko a tsakamisa Ina ___ Ee ___ AT ___
Pain on urinating

Xana a tsakamisa nkarhi na nkarhi Ina ___ Ee ___ AT ___
Frequent urination

Loko ku ri na ku tikeriwa ku n'wana loku nga kona hi kwihi
Any other problems, explain

_____

12. MUHLOVO WA MUXIXITI LOWU WU NGA TOLOVELEKANGIKI
ABNORMAL COLOUR OF URINE
INA EE ANDZI TIVI

Vula muhlovo wa mutsakamiso _____
Specify colour

Swi endleke rini enkarhini wa vuvabyi _____
When during illness?

Muxixito a ri na ngati ke? Ina ___ Ee ___ AT ___
Was there blood in the urine?

13. MUHLOVO LOWA MAPAPA LOWU NGA TOLOVELEKANGIKI
ABNORMAL CLOUR OF STOOLS **INA EE ANDZI TIVI**

Vula muhlovo _____
Specify colour

Rini hi nkarhi wa vuvabyi _____
When during illness

Mapapa a ma ri na ngati ke? Ina ___ Ee ___ AT ___
Was there blood in the stools?

14. MUHLOVO LOWU WU NGA TOLOVELEKANGA WA MAHLO
ABNORMAL CLOUR OF THE EYES

INA EE ANDZI TIVI

Hlamusela muhlovo _____
Specify colour

Mahlo yo tshwuka na mihloti — Ina ___ Ee ___ AT ___
Red eyes with tears

Death of:	Baby (3 months or less)		Do sections 15, 16, 17 then 18
	Woman during pregnancy		Do section 15 then 18
	Woman during labour		Do section 15 then 18
	Woman < 42 days/ 6 weeks after delivery		Do sections 15, 16, 17 then 18
	Woman > 42 days/ 6 weeks after delivery		Go to section 18
	Babies > 3 months and children		Go to section 18
	Woman > 55 years		Go to section 18
	Males (except babies < 3 months)		Go to section 18

15. KU TIKA
PREGNANCY

Nkarhi wo tika – khwiri a riri na tinhweti tingani loko manana a lova kumbe loko n'wana a velekiwa (tinhweti) _____
Duration of pregnancy when mother died or baby born (months)

Xana manana u tikile ka ngaki a nga si kuma khwiri leri ro hetelela? _____
How many pregnancies did she have before this last one?

Xana manana a vabya hi nkari wo tika? — Ina ___ Ee ___ AT ___
Was the mother ill during pregnancy?

Loko kuri Ina, hlamusela _____
If yes, specify

_____

_____

Ku pfimba ka mavoko — Ina ___ Ee ___ AT ___
Swollen hands

Ku pfimba ka milenge — Ina ___ Ee ___ AT ___
Swollen legs

Ku pfimba ka xikandza — Ina ___ Ee ___ AT ___
Swollen face

Xana a byeriwile leswaku u na "high blood" Ina ___ Ee ___ AT ___
Was she told she had high blood pressure?

A endla onge u na switshetshela? Ina ___ Ee ___ AT ___
Did she act as if she had epilepsy (having convulsions) ?

Ku huma ngati hi le vusatini hi ngarhi wa ku tika Ina ___ Ee ___ AT ___
Vaginal bleeding during pregnancy

Loko ku ri ina, a ku ri nhweti ya vungaki ya ku tika ka yena? _____
If yes, at which month in the pregnancy?

Xana u tshunguriwie kwihi? _____
Where was it treated?

Ku tshunguriwa? Ina ___ Ee ___ AT ___
Any treatment?

Loko kuri Ina, hlamusela _____
If yes, specify

_____

Swakudya swo hlawuleka Ina ___ Ee ___ AT ___
Diet (special)

Loko kuri Ina, hlamusela _____
If yes, specify

_____

A ya ka kliniki ya vanhu vo tika ? Ina ___ Ee ___ AT ___
Did she attend ante-natal clinic?

Loko ku ri ina u ye ka ngani ? _____
If yes, how many times?

Loko ku ri ina, u thlaviwile njekixeni? Ina ___ Ee ___ AT ___
Any injection?

Loko ku ri ina, ka swirho swihi swa miri? _____
If yes, where on the body?

Xana u ve vabya loko a tikile Ina ___ Ee ___ AT ___
Was she sick during previous pregnancies?

Loko ku ri Ina, hlamusela _____
If yes, specify

_____

A n'wa ngopfu byala Ina ___ Ee ___ AT ___
Excessive alcohol use

A dzaha sikireti fole loko a tikile Ina ___ Ee ___ AT ___
Did she smoke cigarettes during her pregnancy?

16. KU KUMA N'WANA
DELIVERY

Xana n'wana u tswaleriwe kwihi (ekaya, exibedlele)? _____
Where was the baby born (home, hospital etc)?

Xana a ku ri na ku tikeriwa hinkarhi wo veleka Ina ___ Ee ___ AT ___
Any difficulties or complications during delivery

Loko ku ri Ina, Hlamusela _____
If yes, specify

_____

Mahahlwa Ina ___ Ee ___ AT ___
Multiple birth, (eg. Twins, triplets)

U teke nkarhi wo tani hi kwihi ku veleka (awara, masiku)_____
Duration of labour

Ku hume nhloko ku sungula Ina ___ Ee ___ AT ___
Head came out first

Loko ku nga ri nhloko ku rhange yini? _____
If no, what part came out first?

Yindlu ya n'wana yi humile xana, na swona a yi helerile ke? Ina ___ Ee ___ AT ___
Was the placenta expelled normally and complete

Xana manana loyi u hume ngati nkarhi wo leha ku tlula leswi languteriweke?
Did the woman bleed longer than expected?

Ina ___ Ee ___ AT ___

Loko ku ri ntiyiso, swi teke nkarhi wo tani hi kwihi?
If yes, how long

_____

A juluka / mavoko ya yena ya titimela Ina ___ Ee ___ AT ___
Did she have sweating / cold hands

17. XIYIMO XA N'WANA
CONDITION OF THE BABY

<<>> [To FW : If baby is dead, answer questions (e) to (m).
If mother is dead, answer questions (a) to (g) only]

a. U velekiwe a hanya Ina ___ Ee ___ AT ___
Born alive

b. a Lovile (loko a tlula nkombo wa tinhweti) Ina ___ Ee ___ AT ___
Still birth (born dead at 7 months or more of gestation)

c. a nga velekiwanga
Not delivered
Ina ___ Ee ___ AT ___

d. khwiri ri humile xana (Uvelekiwe a ri na nkarhi wa le hansi ka tinhweti ta 7)
Aborted (born < 7 months)
Ina ___ Ee ___ AT ___

e. Xana n'wana a ri nkulu ngopfu, a ri ntsongo ngopfu, kumbe a ri kahle
Was the baby too big, too small, normal?
too big ____ too small ____ normal ____

f. Nhloko ya n'wana a yi ri yikulu ngopfu, a yi ri yintsongo ngopfu, a yi ri kahle
Was the head too big, too small, normal?
too big ____ too small ____ normal ____

g. Ku na leswi nga hoxeka emirini wa n'wana
Any malformation / defect?
Ina ___ Ee ___ AT ___

Loko ku ri ntiyiso, hlamusela _____
If yes, specify
_____

h. Xana n'wana u rilile a ha ku velekiwa
Did it cry immediately after birth?
Ina ___ Ee ___ AT ___

i. Xana n'wana a hefemula kahle a ha ku velekiwa
Did it breathe normally after birth?
Ina ___ Ee ___ AT ___

j. A tsakamisa kahle
Did it urinate normally?
Ina ___ Ee ___ AT ___

k. A huma kahle
Did it defaecate normally?
Ina ___ Ee ___ AT ___

l. A mama kahle
Did it breast feed?
Ina ___ Ee ___ AT ___

m. Xana nkava wa n'wana a wu bolanga xana
Did the cord get infected / smell bad?
Ina ___ Ee ___ AT ___

---

18. <<>> *[To FW: This section is to be answered by all respondents UNLESS the deceased is a child younger than 2 years.]*

Ku vava ka xifuva
Chest pain
Ina ___ Ee ___ AT ___

Loko ku ri Ina, Nkarhi _____
If yes, duration

Ku vava ka miri
Body pain
Ina ___ Ee ___ AT ___

Loko ku ri Ina, Nkarhi _____
If yes, duration

Ku pandza ka nhloko — Ina ___ Ee ___ AT ___
Headache

Loko ku ri Ina, Nkarhi _____
If yes, duration

Ku ka u nga voni kahle — Ina ___ Ee ___ AT ___
Trouble seeing

---

19. SWIKONBISO SWIN'WANA SWA MAVABYI — INA EE ANDZI TIVI
OTHER SYMPTOMS

Hlamusela _____
Specify

Nkari _____
Duration

A swi sungule rini _____
When started?

A swi herile rini _____
When stopped?

---

20. *<<>> [To FW: Ask the questions in this section to ALL respondents]*

Ku ondza hi nkari wo vabya — Ina ___ Ee ___ AT ___
Weight loss

Xana muvabyi a ondze bya nkhwankhwa? — Ina ___ Ee ___ AT ___
Did the patient appear abnormally thin?

A ondzile angasi vabya — Ina ___ Ee ___ AT ___
Already thin before onset of illness

U tshike kudya loko a vabya — Ina ___ Ee ___ AT ___
Stopped eating during illness

A nga ha swikoti ku minta — Ina ___ Ee ___ AT ___
Could no longer swallow

Xana a twa ku vavisa loko a minta — Ina ___ Ee ___ AT ___
Painful to swallow

A khoma hi torha ngopfu hi nkari wa vuvabyi — Ina ___ Ee ___ AT ___
Very thirsty during illness

Mahlo yo nghena endzeni — Ina ___ Ee ___ AT ___
Sunken eyes

Ku vuna ka nhlonge
Loss of skin elasticity
Ina ___ Ee ___ AT ___

Xana a kuri na ku cinca eka ku huma (tirhuma, tipfuna) ka yena ehandle?
Was there any change in bowel movements?
Ina ___ Ee ___ AT ___

A hlangene nhloko hi nkari wo vabya, xik: aa hatlisa a rivala a lahleriwa hi miehleketo
Mental confusion with onset during illness but before death, e.g. forgetfulness/ loss of concentration
Ina ___ Ee ___ AT ___

Xana a ome miri kumbe swirho
Paralysis of body or of limbs
Ina ___ Ee ___ AT ___

Xana swirho swa miri a swinga tirhi kahle/ ku hela matimba
Weakness of body or of limbs
Ina ___ Ee ___ AT ___

[*If weak or paralysed]* Loko kuri ntiyiso, xirho xihi xa miri _____
If yes, which part of body

[*If weak or paralysed]* Tlhelo rinwe kumbe miri hinwawo one sided ___ both-sided___

[*If weak or paralysed]*Loko ku ri ntiyiso, swi sungule hi xitshuketana, kumbe hi kantsongo tsongo?
Did the weakness start suddenly or gradually? suddenly ____ gradually____

Ku karhala/ no hela matimba hi nkari wa vuvabyi (a nga si fa)
Fatique/ low energy during illness (before death)
Ina ___ Ee ___ AT ___

Xana mufi ari na timvhiyaphi entinhlayeni,emahlweni ka tindleve ke?Ina___ Ee ___AT___
Did the deceased have any swellings in the neck, armpit and/or groin?

Loko kuri ina, xana hi swirho swihi swa miri. neck / armpit / groin
If yes, please circle where the swellings were: neck / armpit / groin

Swi humelele nkarhi wo leha ku fikela kwihi?_____
How long were the swellings present (in days, weeks or months)?

Xana mufi a ri na tinvhiyaphi etinhlayeni, emahlweni ka tindleve ke? Ina____ Ee___ AT___
Did the deceased have any swelling around the jaw, in front of the ear (parotids)?

Ku lahlekeriwa h miehleketo u nga koti no vulavula.
Coma, loss of consciousness
Ina ___ Ee ___ AT ___

Loko ku ri ntiyiso, a swi endleka rini hi nkarhi wo vabya _____
If yes, when during illness

Ku juluka
Sweating
Ina ___ Ee ___ AT ___

Xana mavoko, milenge, nhamu, a swi cince muhlovo
Did the hands, feet, neck change colour
Ina ___ Ee ___ AT ___

Xana nhlonge a yi guvukela
Peeling, scaling of skin
Ina ___ Ee ___ AT ___

Loko ku ri ina, a ku ri eka swirho swihi swa miri? _____
If yes, which parts of the body?

Ku dya misava kumbe nkuma — Ina ___ Ee ___ AT ___
Eating soil or ash

A qumbha — Ina ___ Ee ___ AT ___
Constipation

Ku na van'wana lava nga na swi kombiso swo fana na leswi hi nkarhi lowo
Did other people have the same symptoms at the same time? Ina ___ Ee ___ AT ___

Loko ku ri ntiyiso, hi le ka ndhawu yihi (hlamusela)? _____
If yes, in which place

<<>> *[To FW : ask only if the deceased is a child less than 5 years.]*

Misisi yo tshwuka yi tlhela yi olova. — Ina ___ Ee ___ AT ___
Soft, reddish hair

Xana mufi a huma thyaka hi le tindleveni, ku tlula nhweti kumbe hi minkarhi yo hlaya ke?
Was there discharge from the ear/s for more than one month? Or on many different occasions? Ina ___ Ee ___ AT ___

Xana mufi a tsandzeka ku endla swilo swa ntolovelo, xikombiso kufamba, kutlanga, ku vulavula
Did the child stop doing things he/she could do before? Eg sit, walk, talk, play Ina ___ Ee ___ AT ___

Xana n'wana a ha mama bodlhela? — Ina ___ Ee ___ AT _____
Was child still bottle feeding?

Xana n'wana a ha mama vele? — Ina ___ Ee ___ AT _____
Was child still breast feeding?

Xana n'wana loyi a khomiwa hi mavabyi ku tlula vana van'wana endyangwini kumbe emugangeni ke?
Did the child get more illnesses compared to other children in the family or the community? Ina ___ Ee ___ AT ___

Xana manana wa n'wana langa lova u hanya kahle ke? — Ina ___ Ee ___ AT ___
Is the mother (of the dead child) healthy?

Loko kuri ee, u karhatiwa (vabya) hi yini ke? _____
If no, what is her sickness?

_____

_____

Xana tata wa mufi u hanye kahle ke? — Ina ___ Ee ___ AT ___
Is the father (of the dead child) healthy?

Loko kuri ee, u karhatiwa (vabya) hi yini ke? _____
If no, what is his sickness?

_____

_____

21. MAHANYELO
LIFESTYLE

Xana loyi a loveke a nwa byalwa eka lembe leri nga hundza ke? **INA ___ EE ___ AT ___**
Did the deceased drink alcohol during the last year before he died?

Loko kuru ina, anwa masiku mangani evhikini? _____
If yes, how many days a week did he/she drink?

Loko kuri ntiyiso, a nwa byala byo fikela kwihi (hi siku)? _____
How much in one day?

_____

U new nkari wotani hikwi (malembe) _____
For how long (years)

A nwa swipyopyisi swa muxaka wihi (swa xintima/swa xilungu/ xipayoni)? _____
What type of alcohol (e.g. African or Western beer, or traditional 'hot stuff')?

_____

Xana kuvile na nkari lowu anga lahlekeriwa hi ntirho hi kwalaho ko nwa byalwa ngopfu ke?
Did the person ever lose a job because of alcohol use? Ina ___ Ee ___ AT ___

Xana munhu loyi u tshamile a va ni nghozi hi kwalaho ko nwa byalwa ke?
Did the person ever have an accident because of alcohol? Ina ___ Ee ___ AT ___

Xana u tshame a lwisa hikokwalaho ko nwa byalwa ke? Ina ___ Ee ___ AT ___
Did the person ever have a fight because of alcohol?

[In the <u>week</u> before death:]

Xana a pyopyiwile? Ina ___ Ee ___ AT ___
Did the deceased get drunk?

Loko kuri ina, xana a dedeleka? Ina ___ Ee ___ AT ___
If yes, was the deceased unable to walk due to drunkeness?

A dzaha fole **INA ___ EE ___ AT ___**
Smoking

Loko kuri ntiyiso, a dzaha mafole mangani hisiku _____
If yes, how many cigarettes a day?

U dzaha nkari wotani hikiwi (malembe) _____
For how long (years)

Loko kuri boxer, xana phakithi ari heta masiku mangani? _____
If boxer, how long does the packet last?

A dzaha swidzidzirisi (e.g. mbangi) xana **INA ___ EE___ AT ___**
Was he abusing substances e.g. dagga?

Loko kuri ina, xana a tirhisile xidzidzirisi xihi? (mbangi, glue, petirolo, mandrax etc.)
If yes, what substances?

_____

_____

Vutiolori/ kutirhisa miri
Physical activity

Ehleketa hi nkari lowu mufi anga si vabya:
Thinking about the time before the deceased became ill:

Xana munhu loyi ari loyi a tirhisaka miri wa yena masiku layo tala? (e.g ku famba, ku hlakula, ku tsema tihunyi, ku rhwala mati etc.)
Was the person physically active most of the day? (e.g walking, hoeing, cutting wood, carrying water)?
Ina ___ Ee ___ AT ___

Xana mufi a ri munhu wa migingiriko ku fikela laha anga va na ku tikeriwa ka swilo leswi a lava ku swi endla (xik: ku famba, ku rhwala mati)
Was the person kept active but had difficulty doing the things he/she needed to do (e.g. walking, carrying water etc.)
Ina ___ Ee ___ AT ___

Xana ari na vulolo, a kumeka a tshamile minkarhi yo tala? Ina ___ Ee ___ AT ___
Was the person not active, spent a lot of time sitting?

Xana munhu loyi a kumeka a tshamile nkari wo tala – a nga swi koti ku tiendlela swa n'wa nchumu? Was the person immobile/ sitting most of the day, dependent on other people for care?
Ina ___ Ee ___ AT ___

<<>> [To FW : ask only if deceased is MALE.]

A tirha mayini / emgodini **Ina ___ Ee ___ AT ___**
Worked underground on a mine

Aku ri mayini wa yini xana, golida _____"asbestos" _____ swin'wana _____
What type of mine, gold, asbestos, other

Xana mayini kumbe mugodi lowu wu le kwihi (vula vito ra mugodi kumbe vito ra doroba laha wu kumekaka kona? Name and / or location of mine.

_____

Xana a kumile mali yo n'wi rilisa eka mavabyi lama a ma kumeke loko a tirha emugodini ke?
Any compensation for illness received ? Ina ___ Ee ___ AT ___

U tirhe mayini/ emgodini malembe mangani _____
For how many years did he work underground?

Xana u hetelele rini ku tirha emayeni/mgodini_____
When last did he work underground?

22. MAVABYI LA MA NGA TSHUNGURIWEKI INA EE ANDZI TIVI
CHRONIC DISEASE: high blood pressure, sugar diabetes, asthma, heart failure, epilepsy, mental illness.

Hlamusela mavabyi na ku tshunguleka loku ku nga kumiwa hi mufi
Specify disease and treatment

_____
_____
_____
_____
_____

<<>> To FW : this section is specifically about the treatment for the illness from which the deceased died. Include information on treatment from a traditional healer as well as from the health services

23. KU TSHUNGURIWA KA MUFI (HLAMUSELA)
TREATMENT RECEIVED (SPECIFY)

Xana a tshunguriwile hi xilungu ke ? Ina ___ Ee ___ AT ___
Western treatment received?

Loko ku ri ina, a nyikiwile mirhi yihi xana ?
If yes, what medicine?

_____
_____
_____

Xana a nyikiwile mirhi ya xintima ke ? Ina ___ Ee ___ AT ___
Traditional treatment received?

<<>> (Include EVERYTHING not western eg. ZCC tea, prayers etc)

Loko ku ri ina a ku ri muhlovo wihi wa murhi?_____
If yes, what type

_____
_____
_____

Loko atshunguriwile hi xilungu na xintima, xana hi wihi murhi lowu a nga sungula a kuma wona?
If both used, which treatment was sought first?

_____

24. LOKO E RI NA SWIN'WANA SWO ENGETELA
OTHER REMARKS

_____
_____
_____
_____
_____

Health Care Utilisation During Terminal Illness

Immunisation, (children under 5 years) Which ones?							Had access to medical aid ?	Sought care? Y/N	Where 1	Where2	Where3	If no care, why not? Can list >1 code	Hospital during illness (in 6 months before death)? Y/N	Which hospital?	No. of days in hospital
BCG	Polio	DTP	Hib	HepB	Meas	Y, no card									

Codes

Immunisation
Number of doses: 0, 1, 2, 3, 4
9=reported child had immunizations but no RTH card

Medical aid?
0=no
1=covered by a medical aid for whenever needed to go to doctor
2=was covered by health insurance for a specific disease(s)
3=was allowed to go to employer's clinic/hospital
4=other (specify)

Where:
1. Public clinic / health center
2. Public Hospital
3. Doctor didn't have to pay for (district surgeon), not in a public hospital
4. Private doctor (had to pay)
5. Private specialist doctor (referred to by another doctor)?
6. Traditional healer
7. Private Hospital out-patient or casualty
8. **Private Chemist**
9. Drugs from shop
10. other (specify)

Why not?
1. did not seem sick enough
2. thought illness would get better on its own
3. did not know where to go
4. No time
5. Not enough money for consultation
6. Transport too expensive
7. Nothing could be done for illness
8. needed permission of husband/father etc, and not available/refused
9. Nobody to go with him/her
10. No drugs
11. Staff attitudes poor
12. too little time with health worker
13. Queue too long
14. Too far to travel
15. other (specify)

Hospitalisation, which one?
No=0
Yes,....Which one?
1= Mapulaneng
2= Matikwane
3= Tintswalo
4= Rob Ferreira
5= Nelspruit Private Hospital
6= Pietersburg Mankweng
7= Other (write name)

ASSESSMENT ONE

CAUSE OF DEATH DIAGNOSIS

Probable main cause: _____

Probable immediate cause: _____

Probable contributing cause(s): _____

NAME OF MEDICAL DOCTOR: _____

ASSESSMENT TWO

CAUSE OF DEATH DIAGNOSIS

Probable main cause: _____

Probable immediate cause: _____

Probable contributing cause(s): _____

NAME OF MEDICAL DOCTOR: _____

APPENDIX C

ETHICAL CLEARANCE

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

COMMITTEE FOR RESEARCH ON HUMAN SUBJECTS (MEDICAL)
Ref: R14/49 Mosiane

CLEARANCE CERTIFICATE **PROTOCOL NUMBER** M03-07-16

PROJECT Mortality and Violence in Agincourt, A Rural Area of South Africa

INVESTIGATORS MNA Mosiane

DEPARTMENT School of Public Health, Wits Medical School

DATE CONSIDERED 03-07-25

DECISION OF THE COMMITTEE Approved unconditionally

Unless otherwise specified the ethical clearance is valid for 5 years but may be renewed upon application
This ethical clearance will expire on 1 January 2008.

DATE 03-07-28 CHAIRMAN .....(Professor P E Cleaton-Jones)

* Guidelines for written "informed consent" attached where applicable.

c c Supervisor: Dr K Kahn
Dept of School of Public Health, Wits Medical School
Works2\Iain0015\HumEth97.wdb\M 03-07-16

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DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and ONE COPY returned to the Secretary at Room 10001, 10th Floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. I agree to a completion of a yearly progress form. I/we agree to inform the Committee once the study is completed.

DATE 28/08/2003 SIGNATURE .....

PLEASE QUOTE THE PROTOCOL NO IN ALL QUERIES .: M 03-07-16
PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

:
UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 MNA Mosiane

CLEARANCE CERTIFICATE	**M090477**
PROJECT	Mortality and Violence in Agincourt Area, of South Africa
INVESTIGATORS	MNA Mosiane.
DEPARTMENT	School of Public health
DATE CONSIDERED	
DECISION OF THE COMMITTEE*	

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 09.04.29 **CHAIRPERSON** .....
(Professor P E Cleaton Jones)

*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor :

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

.....

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