Demographic features of homicide and suicide victims in Trinidad and Tobago
2013-2016

Abstract
Objectives:
Violence and self-injury have emerged as major social, public and mental health concerns. Health and social services are challenged by the increased use and demand for resources. This study sought to determine the factors attributable to these problem behaviours in Trinidad and Tobago, in order that adaptive strategies can be developed to address these problems.

Methods:
After obtaining relevant approvals, data were collected retrospectively on homicide and suicide victims from 2013 through 2016 from the Registrar General’s Department and the Forensic Science Centre. Data were analysed to determine the demographic characteristics and other factors associated with suicides and homicides.

Results:
Male gender was significantly predominant for both suicides and homicides; males in middle adulthood age-range (34-42) years were at the highest risk. Both behaviours increased in prevalence over the study period, although homicide showed a much more marked increase. The mean age for homicide was 34 years, while for suicide it was 41 years. A greater and significant number of individuals of African descent were involved in homicide and a greater number of East Indians were dying by suicide. The ratio is approximately 3:1 for both causes of death.

Conclusions:
Suicide and homicides have increased over a period of four years in Trinidad & Tobago. There is a need for the establishment of a registry in order to record the occurrences of self-harm and externally directed violence accurately and comprehensively. A better understanding of these behaviours can result in better prevention and intervention methods.

Introduction
The World Health Organization (WHO) has estimated that homicide and suicide together account for well over one million deaths in the world every year [1]. Violence and self-injury have emerged as major social, public and mental health concerns as health and social services are notably challenged by these acts [2]. Injuries, violence and accidents are the greatest cause of mortality in Latin America and the Caribbean in the 15 - 29 age range. Suicide is a particular problem in some countries in the region e.g., Guyana, Suriname, Trinidad where the rates are greater than the regional and international average [3]. In Trinidad and Tobago as well, the 21st century has seen a marked upsurge in violent crime [4, 5]. Young males living in urban environments have been the most common offenders and victims. Obtaining basic data on homicides and successful suicides offers the first step in understanding these phenomena and consequently developing specific preventive and intervention strategies. It has been proposed that homicide and suicide may share similar aetiological substrates and might be reactions to similar internal and external events [6].

An initial attempt at evaluating data about the relationship between homicide and suicide and various demographic and ecological data in Trinidad revealed that victims of homicide were located particularly in the North East regions of Trinidad and associated with African ethnicity and school dropouts [7]; suicide was
associated with South Central geography and Indian ethnicity, with alcohol consumption being a likely correlated factor. This present study sought to identify risk factors to conduct the comparative analysis. More detailed analysis of data on both homicide and suicide may reveal relationships related to geography and the social environment within a country that can then inform preventive and intervention efforts. Mental health problems are major risk factors for homicide and suicide, with substance use disorders, personality and mood disorders being especially implicated [8]. Post-traumatic stress disorder is also increasingly linked to violence and self-injury. However information regarding mental health service contact and diagnosis is not easily accessible. Additionally, many people who engage in these destructive behaviours have no history of mental health contact even in developed countries such as the United States [9].

There have been issues regarding the documentation and storage of data related to homicides and suicides and access to reliable and comprehensive data remains difficult in Trinidad. The recording and registration of this kind of data in Trinidad and Tobago is not consistently accurate and the Police service remains the most useful source, although this may not be so effective for suicides. Demographic data related to both homicide and suicide may not be consistently captured as manner of death (i.e. natural, accident, suicide, homicide, or undetermined) is not recorded on death certificates. There have been a variety of explanations for this, such as privacy concerns due to stigma, insurance payouts, ignorance and bureaucracy. Notwithstanding these limitations, there is still a need to identify the prevalence of these behaviours, since they may have serious social consequences and are also increasingly a burden on economic resources of a country. The notion of preventable death among younger people is useful in appreciating the loss of productivity and the emotional burden that accompanied their premature demise. This emotional burden on families may also increase their risk of bereavement-related mental issues.

This study therefore sought to determine the demographic factors associated with these problems in Trinidad and Tobago in order that adaptive strategies can be developed to address these problems.

**Methods**

Approval was obtained from the Ethics Committee of the University of the West Indies. Although the main data source was the Registrar General’s Department, several other agencies were also approached for information in order to address the gaps in data. The Registrar General’s Department (RGD) allowed access to records of all deaths between 2013 and 2016. These data enabled to determine the frequencies of homicides and suicides in the context of the other typical manners of death. Although these records provided demographic data and cause of death, other demographic data such as the gender, ethnicity and manner of death were not available. Hence the Forensic Science Centre (FSC) database was used in order to record the missing demographic data and manner of death.

Natural causes, accidents, and homicides were identified based on information already available from the RGD, supplemented by FSC records, Trinidad & Tobago Police Service (TTPS) homicide records, as well as newspaper reports. Suicides, however, were less easily discernible as this data were only available from FSC records and a few newspaper reports. A forensic pathologist was consulted in order to assist in manner of death classification, where suicide was suspected based on the cause of death provided by the Registrar General’s death records. The month, year, season, race, method used and death classification were recorded along with age, gender, date of death, place of death and cause of death. FSC records, TTPS records and newspaper reports helped to fill in missing information where possible. The demographic and residential characteristics of victims of both homicide and suicide were identified and compared, comparisons were also made between the current research findings and a previous research in 2005 by Hutchinson et al [7] to
determine if there were any changes in the patterns as well as the aspects that could have remained unchanged over time.

The homicide and suicide victim populations were collated in MS Excel and then entered into Statistical Package for Social Sciences (SPSS) for analysis. Descriptive analyses were done and frequencies were calculated. Chi-square tests of association were conducted to assess the relationship between and among demographic and residential characteristics of victims of both homicide and suicide.

For the purpose of this study, only homicides resulting from inter-personal violence were used, therefore homicides were broken down to identify which were violent homicides, i.e., all murders and some manslaughter cases.

Results
This study examines the characteristics of homicides and suicides that occurred in Trinidad and Tobago from 2013 to 2016. Overall there were 45,006 recorded deaths from 2013 through 2016. The mean age of dead persons was 65 years, the youngest person was less than 1 month old and the eldest was 111 years old.

Homicides
The study included 1,726 victims of violent homicide, who died during the period of four years from 2013 to 2016 after excluding vehicular killings, police homicides and justifiable homicides. The mean age of victims was 34 years, the youngest victim was four months old and the eldest was 90 years old. There were 1545 (89.5%) male victims and 162 (9.4%) female victims, the sex of 19 victims were unknown. The ethnic descent was available for only approximately half of all homicide victims, 38.9% (n=672) of all homicides were of African descent, 11.8% (n=203) were of East Indian descent, 6.4% (n=111) were ‘Other’ (Mixed/Caucasian/Chinese) and 42.9% (n=740) were unknown.

Suicides
The study included 667 victims of suicide during the study period. The mean age of victims was 41 years, the youngest person was 13 years old and the eldest was 91 years old. There were 527 (79%) male victims and 110 (16.5%) female victims. The ethnicity of less than one-third of suicide victims was known, 20% (n=133) of all suicides were of East Indian descent, 6.6% (n=44) were of African descent, 4.2% (n=28) were ‘Other’ and 69.3% (n=462) were unknown. The percentage distribution of death by accidents, homicide and suicide in T&T from 2013-2016 is shown in Table 1.

Table 1: Frequency and rate of deaths from 2013-2016

<table>
<thead>
<tr>
<th>Death Classification</th>
<th>Mean Frequency per year</th>
<th>Rate per 100,000</th>
<th>% of all T&amp;T Deaths 2013-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident</td>
<td>251</td>
<td>18.54</td>
<td>2.2%</td>
</tr>
<tr>
<td>Homicide</td>
<td>431</td>
<td>31.91</td>
<td>3.8%</td>
</tr>
<tr>
<td>Suicide</td>
<td>167</td>
<td>12.33</td>
<td>1.5%</td>
</tr>
<tr>
<td>Unknown</td>
<td>71</td>
<td>5.24</td>
<td>0.6%</td>
</tr>
<tr>
<td>Total Deaths</td>
<td>11251</td>
<td>831.01</td>
<td></td>
</tr>
</tbody>
</table>
Changes in homicide and suicide means and rates over time
Over the four-year period, there were a total of 1726 homicides, with an annual mean of 431.5 (7.1, standard deviation, SD). The mean (SD) for suicide was 166.7 (1.2). The mean annual homicide and suicide rates were compared with that in the previous study conducted by Hutchinson in 2005. During the period 1991-2000 the suicide rate was 9.27 per 100,000 while for 2013 to 2016 it was 12.33, an increase of 33%. For homicide, the rates rose from 8.9 to 31.9 per 100,000, an increase of 350%. Table 2 depicts the increasing trend of these rates.

Table 2: Comparison of Homicide and Suicide means

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Homicide Total</th>
<th>Annual Homicide Mean</th>
<th>Suicide Total</th>
<th>Annual Suicide Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991-2000</td>
<td>1093</td>
<td>109.3</td>
<td>1133</td>
<td>113.3</td>
</tr>
<tr>
<td>2013-2016</td>
<td>1726</td>
<td>431.5</td>
<td>667</td>
<td>166.7</td>
</tr>
</tbody>
</table>

Similar to the 2005 study by Hutchinson et al, the current study also looked at homicide and suicide rates according to the age group population based on information provided by the T&T Central Statistics Office. The current study used the CSO 2016 mid-year estimation for age-group comparison.

Firearm remains the most frequent weapon used for homicides and poisoning remains the most frequently method used for suicide. However, firearm-related homicide increased by almost 20%, while homicide caused by sharp instruments decreased by approximately 25%. This has been shown in Table 3.

Table 3: Homicide Trends

<table>
<thead>
<tr>
<th>Homicide Means</th>
<th>Frequency 2013-2016</th>
<th>2013-2016 %</th>
<th>1991-2000 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firearm</td>
<td>1366</td>
<td>79.6%</td>
<td>60.5%</td>
</tr>
<tr>
<td>Sharp Instrument</td>
<td>216</td>
<td>12.6%</td>
<td>38.2%</td>
</tr>
<tr>
<td>Blunt Force</td>
<td>84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>32</td>
<td>7.8%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Strangulation</td>
<td>134</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire</td>
<td>18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is also noteworthy that suicide by poisoning decreased by 10.5% while suicide by hanging increased by 10.3%, which is shown in Table 4.

Table 4: Suicide Trends

<table>
<thead>
<tr>
<th>Suicide Means</th>
<th>Frequency 2013-2016</th>
<th>2013-2016 %</th>
<th>1991-2000 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poison</td>
<td>358</td>
<td>53.7%</td>
<td>64.2%</td>
</tr>
<tr>
<td>Hanging</td>
<td>271</td>
<td>40.6%</td>
<td>30.3%</td>
</tr>
</tbody>
</table>
Comparison of homicide and suicide characteristics

Demographic Characteristics

Gender

The majority of both homicide and suicide victims were male (Figure 1).

However, when compared between suicide and homicide, females comprised a significantly larger percentage distribution of suicide victims than homicide victims ($\chi^2 (2, N= 2344) = 27.36, p<0.001$).

The majority of firearm homicide victims were men (94.6%, n=1283), however firearm was the method used most frequently against both male and female homicide victims. Poisoning was the most frequent method used by both male (49.5%, n=260) and female (69.1%, n=76) suicide victims, followed by hanging (44.6%, n=235 of males, 25.5%, n=28 of females).

Ethnicity

Homicide victims were significantly more likely to be of African descent, and suicide victims were significantly more likely to be of East Indian descent, $\chi^2 (4, N= 1191) = 182.17, p<0.01$. The distribution of African and East Indian homicide and suicide victims seem to be inversely related, however the number of homicide victims outweighed the number of suicide victims in all races (Figure 2).
There was also a significant relationship between the ethnicity and manner of death for persons of African and East Indian descent. A Chi square analysis was conducted on race and manner of death and column proportions were compared. There was a significant relationship between race and manner of death, $\chi^2 (2, N=1232) = 185.993$, $p<0.01$ (Figure 3).

*Figure 3: Racial distribution of suicide victims based on means used*
A pairwise z-test post hoc analysis with Bonferroni correction revealed that for persons of African and East Indian descent there was a significant difference between the homicide and suicide percentages (p<0.05).

**Age**
A Chi square analysis was conducted to see if there was any relationship between age distributions and manner of death. Victims were significantly more likely to be homicide victims in the ‘26-35 years’ age group $\chi^2 (7, N= 2501) = 168.123$, p<0.01.

An independent t-test was conducted to analyse whether there was any significant difference in the ages of homicide victims and suicide victims. Homicide victims were significantly younger than suicide victims, t (662) = -8.56, p<0.001. The distribution of homicide victims was skewed sharply to the left with 60% in the 16-35 year age group, while suicide victims were distributed in all age groups, with 40% in 16-35 year age group (Figure 4).

*Figure 4: Age distributions of homicide victims and suicide victims*
Spatiotemporal Characteristics

A Chi-square test of association was conducted to identify whether there was any association between manner of death and geographic area. Homicide victims were significantly belonging to the Northwest region of the island, while the Southwest area predominated for suicides $\chi^2 (6, \ N=2338) = 168.21, \ p<0.01$. Table 5 shows the regional distribution.

Table 5: Distribution of homicides and suicides based on location

<table>
<thead>
<tr>
<th>2013 - 2016</th>
<th>Northwest</th>
<th>Northcentral</th>
<th>Northeast</th>
<th>Central</th>
<th>Southwest</th>
<th>Southeast</th>
<th>Tobago</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homicide (n=752)</td>
<td>45%</td>
<td>16%</td>
<td>5.4%</td>
<td>15.1%</td>
<td>15.2%</td>
<td>1.9%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Suicide (n=107)</td>
<td>16%</td>
<td>19.9%</td>
<td>11.1%</td>
<td>15%</td>
<td>33.7%</td>
<td>2.2%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

A Chi-square test of association was also conducted to identify whether there was any relationship between year, or season and the frequency of homicides and suicides. There was no significant difference between distributions of homicides and distributions of suicides across 2013-2016, $\chi^2 (3, \ N= 2393) = 2.730, \ p>0.05$. There was also no difference between distributions of homicides and distributions of suicides across seasons $\chi^2 (3, \ N= 2393) = 1.22, \ p>0.05$. 
Discussion
This study was able to determine the demographic characteristics and the trend of homicides as well as suicides in Trinidad and Tobago in the recent times. The salient finding of the study is the phenomenal increase in the number of homicides and suicides over the study period as well as compared to an earlier study conducted during 2005 [7].

It must be noted that although there were increases in both homicide and suicide rates, the increase in the rates of homicides were found to be particularly profound. These findings are broadly consistent with previous reports wherein males significantly predominated for both suicide and homicide in Trinidad and Tobago [5, 7, 10, 11]. Both for suicides as well as homicides middle adulthood age (range 34 – 42 years) is more prone to be susceptible. The average age for homicide is younger (34 years) than that for suicide (41 years). There was a very wide age range for suicide (13 to 91 years) probably reflecting a spread of this behaviour across a wide range of ages perhaps with differing psychogenic aetiologies at different ages. This underlines the need for a similarly wide range of interventions to meet such varying needs. It was not surprising that the male gender predominated for both suicide and homicide. With respect to the modes, firearms were commonly used for homicide and poisoning was the most common method for suicide. A new finding in this study is that there has been an increase in the use of hanging as a method for committing suicide, compared to the previous study [7].

Although there were a considerable number of cases where ethnicity information was unavailable, there seems to be a greater and significant number of individuals of African descent dying by homicide and a greater number of East Indians dying by suicide. The ratio is approximately 3:1 for both causes of death; the ratio of Africans to Indians as victims of homicide is 3:1, and for suicide victims the ratio is also 3:1, however the ethnicity was reversed in this case, Indians were three times likely to be the victims for suicide. Community outreach and deep penetration into cultural norms must be a vital component for any methodology of homicide and suicide prevention. Particular notice must be given to the communities and areas where these behaviours are most common. Suicide by poisoning is the most common means and more work needs to be done to limit the availability of these poisons as well as to decrease their lethality. Interestingly the study found that both homicide and suicide were lower in Tobago, compared to Trinidad.

Alternative responses to conflict and dissatisfaction must be found to counter violent behavior. From 2001-2010, 29% of homicides were officially classified by the Police as gang-related [12], while by 2013 this increased to 48% [5]. This points to the need of addressing the issues regarding gang membership and these must be instituted in communities where the homicide rate is high. These would include improving parental supervision, school dropout programmes, literacy training and supporting community artistic output projects [11]. For both suicide and homicide prevention, addressing the socio-economic needs remain paramount. Prevention of both self-directed harm and harm extended to other people may be mitigated by improving the socioeconomic conditions of population. Previous work has pointed to relationship issues as the major antecedent of suicidal behaviour, whether these issues arise out of family or romantic conflict, alternative means of resolution need to be highlighted and encouraged in the relevant communities [13].

The study has some limitations. A large number of missing data highlights the need for more accurate recording and registration of this kind of data. The need for better recording is necessary for any form of detailed analysis and development of practical solutions. A registry would facilitate accurate capture of relevant data for these destructive social phenomena, which is vitally needed to better understand and address the issues contributing to their relatively increased presence in the Trinidad and Tobago environment. These
difficulties also contribute to uncertainty regarding the validity and reliability of the available data.

Another limitation was the study’s inability to determine whether these individuals had any mental disorder history or had prior contact with mental health services. Nevertheless, the study established the demographic, residential and ethnic background as well as the temporal trend and modes of committing homicide and suicide in the victims of Trinidad & Tobago spanning a period of four years. There is a definite need for the establishment of a registry to record accurately and comprehensively these occurrences of self-harm and externally directed violence so that a better understanding of these behaviours can result in improved prevention and intervention methods.

References

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11. Katz C, Choate D, Fox A. Understanding and Preventing Gang Membership in Trinidad and Tobago. Unknown Publisher, 2010