

The Epidemiology of Suicide in Jamaica 2002–2010: Rates and Patterns

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ABSTRACT

Objective: Suicide is increasingly recognized as a worldwide problem. There is a paucity of quality data pertaining to suicide in developing countries. Epidemiological analysis of suicide data elucidates prevailing patterns that facilitate risk factor identification and the development of germane programmatic responses. This paper analyses temporal variations in suicide rates for the years 2002–2010 in Jamaica and describes the sociodemographic profile of cases and method of suicide for the latter four years.

Method: Data pertaining to suicides were extracted from the police (The Jamaica Constabulary Force) records. These were summarized and analysed with respect to person, place and time. Population statistics for the computation of rates were obtained from publications of the Statistical Institute of Jamaica. Age-standardized rates were generated for comparison of trends over time. Poisson and binomial probabilities were used to determine statistically significant differences in rates.

Results: Suicide rates in Jamaica have remained relatively stable for the period reviewed with mean overall annual incidence of 2.1 per 100 000 population. Rates for males were significantly higher than those for females. The majority (90.4%) of suicide cases were males. A trend for higher rates of suicide was generally noted in the 25–34-year and the 75-year and over age groups. Hanging was the main method used to commit suicide (77.5%).

Conclusions: Age-adjusted rates of suicide indicate no significant changes in Jamaica over the period 2002 to 2010. Continued surveillance of suicide as well as improved recording of the circumstances surrounding suicides are recommended to promote greater understanding of suicides and this will ultimately inform intervention strategies.

Keywords: Developing country, epidemiology, Jamaica, suicide rates

Epidemiología del Suicidio en Jamaica de 2002 a 2010: Tasas y Patrones

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RESUMEN

Objetivo: El suicidio adquiere cada vez mayor reconocimiento como problema mundial. Existe una escasez de datos cualitativos en relación con el suicidio en los países en vías de desarrollo. El análisis epidemiológico de los datos sobre suicidio dilucida los patrones prevalecientes que facilitan la identificación de factores de riesgo y el desarrollo de respuestas programáticas relacionadas. El presente trabajo analiza las variaciones temporales de las tasas de suicidio durante los años 2002–2010 en Jamaica, y describe el perfil demográfico de los casos y métodos de suicidio durante los últimos cuatro años.

Método: Datos relacionados con el suicidio fueron tomados de los archivos de la policía (Jamaica Constabulary Force). Los mismos fueron resumidos y analizados con respecto a la persona, el lugar y el tiempo. Se obtuvieron estadísticas de la población para el cómputo de tasas. Las estadísticas fueron tomadas de las publicaciones del Instituto Estadístico de Jamaica. Se generaron tasas estandarizadas por edad con el fin de hacer una comparación de las tendencias a través del tiempo. Se usaron probabilidades binomiales y de Poisson, para determinar las diferencias estadísticamente significativas en las tasas.

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Resultados: Las tasas de suicidio en Jamaica han permanecido relativamente estables en el periodo bajo estudio, con una incidencia promedio anual general de 2.1 por 100 000 habitantes. Las tasas de los varones fueron significativamente más altas que las de las hembras. La mayoría (90.4%) de los casos de suicidio fueron varones. Se observó generalmente una tendencia a tasas más altas de suicidio en los grupos de edades de 25-34 años, y 75 años o más. El ahorcamiento fue el método principal usado para cometer suicidio (77.5%).

Conclusiones: Las tasas de suicidio ajustadas por edad no indican ningún cambio significativo en Jamaica en el periodo de 2002 a 2010. Se recomienda una vigilancia continuada de los actos de suicidio así como el mejoramiento de los registros de las circunstancias en torno a los mismos, a fin de promover un mayor entendiendo de estos, con lo cual se podrán lograr a la larga estrategias de intervención bien informadas.

Palabras claves: País en desarrollo, epidemiología, Jamaica, tasas de suicidio

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INTRODUCTION

Suicide has emerged as an intersecting social and public health problem. According to the World Health Organization (WHO) estimates, the suicide rate worldwide is 16 per 100 000 and this translates as one suicide every 40 seconds. This rate is increasing in both developed and developing countries (1). In developed countries, suicides are the largest contributors to the burden of intentional injuries (2). However, suicide is not solely a developed country problem as 86% of suicides occur in middle- and low-income states (3).

A trawl of the literature reveals a relative paucity of quality data relating to suicide in developing countries. Vijayakumar has noted the lack of data concerning suicide in slightly more than half of the countries that comprise the developing world (4). Within the Caribbean, suicide data collection and reporting are variable. Countries such as the Dominican Republic, Cuba and Puerto Rico consistently report on suicide rates. In the English-speaking Caribbean, the published and grey literatures documenting and analysing suicide rates (5-9) are episodic. Moreover, WHO rates (9) reported for the Caribbean range from as low of 0.0 per 100 000 in Haiti and St Kitts and Nevis to 20.4 per 100 000 in Trinidad and Tobago with the data varying by the latest available year from 1990 to 2003, raising questions as to accuracy, timeliness and validity of some of the data (10).

Several studies have been conducted in Jamaica on suicide. In a psychological autopsy conducted in 1998, Irons-Morgan (7) reported a suicide rate of 2.85 per 100 000 and Abel *et al* reported suicide rates between 1.8 and 2.7 per 100 000 (11).

A multiplicity of reasons has been advanced for the growing rates of suicide. These include: increased prevalence of depressive disorders, unemployment and rising economic insecurity, loss of social cohesion and erosion of traditional family structures (12). Some of the posited explanatory factors are consistent with ideas advocated by Durkheim in his seminal study on suicide in which the term 'anomie' was coined in reference to a sense of 'normless-

ness', resulting in individual detachment and disconnection from other members of a group or society at large which ostensibly increase the risk of suicide (13).

Notable among the psychiatric conditions cited in the literature as risk factors for suicide are: schizophrenia, alcohol or drug abuse, post-traumatic stress disorder, bulimia or anorexia nervosa and antisocial personality disorders (14). A history of previous attempted suicide, family history of suicide and impulsivity are also recognized predisposing factors. So too are demographic characteristics such as gender; males being three to five times more likely to die by suicide than females. Age and ethnicity may also play a role. Elderly Caucasian males have the highest suicide rates (14). Of note in developing countries, intergenerational conflicts, love failure, and examination failure have been associated with suicide (4).

In Jamaica, a spate of suicides and murder-suicides occurred within a short period of time (February to April 2011) and fuelled concerns and speculations about increasing suicide rates within the country (15). Consequently, an epidemiological examination of suicide data was warranted to clarify and elucidate patterns and trends. Research is crucial to the enrichment of the local literature and better understanding and eventual prevention of suicide. Data can facilitate risk factor identification and the crafting of informed policy and programmatic responses tailored to the local environment. This paper's aims are to firstly, analyse temporal variations in suicide rates for the years 2002 to 2010 and secondly, to disaggregate and describe cases by sociodemographic profile and method of suicide for the latter four years.

SUBJECTS AND METHODS

In Jamaica, the information formally and routinely collected by the police includes that concerned with reported suicides. The system which has been in place since the late 1990s constitutes a veritable source from which suicide data may be garnered. The police collects data on suicides for persons five years old and older. From the police records, informa-

tion pertaining to the number of suicides as well as associated variables: age, gender, occupation, address, method used to commit suicide and date of suicide were extracted for the years 2007 to 2010. For establishing time-trends related to suicide rates, aggregate data which were available for the years 2002 to 2010 were utilized.

The data were subsequently coded, entered and cleaned with the use of the Statistical Package for the Social Sciences (version 17.0) software. Yearly suicide rates by age and gender were computed. For comparison of trends over time, age-adjusted rates were generated by the direct method using the 2001 Census population of Jamaica (16) as the standard. Population denominators excluded the population younger than five years old.

Examination of rates by sociodemographic variables was also done. For occupation, the classification/categorization system developed by the Statistical Institute of Jamaica (17) was used. Data were summarized numerically and graphically and presented as tables and charts. As appropriate, statistical tests were done to determine significant associations among variables and included the use of Poisson and Binomial probabilities. *P*-values of less than 0.05 were deemed as statistically significant.

RESULTS

Age-adjusted suicide rates

Figure 1 shows the temporal variation of age-adjusted suicide rates by gender in Jamaica for the period of 2002 to 2010.

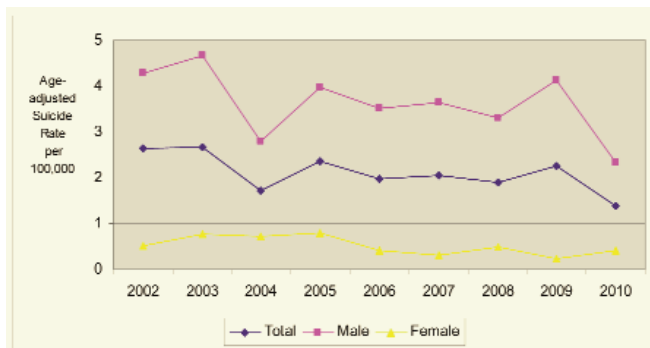


Fig. 1: Age-adjusted suicide rates by year and sex.

Rates for males were more variable for the period than females. Male rates ranged from a high of 4.7 per 100 000 population in 2003 to a low of 2.3 per 100 000 population in 2010. During the period under review, female rates ranged from 0.2 per 100 000 to 0.8 per 100 000. Overall, the mean annual age-adjusted incidence of suicides was 2.1 per 100 000 for the 2002–2010 period. While there was a slight downward trend with time, application of Poisson probabilities revealed no statistically significant difference between the mean rate of 2.3 per 100 000 in the first part (2002–2006) and that of 1.9 per 100 000 in the second part (2007–2010) of the time period reviewed ($p = 0.3546$).

Tables 1 and 2 summarize the variation in age-specific rates for each gender, respectively. For males across all years, the 5 to 14-year age group consistently had the lowest rates. For the 2002 to 2006 period, rates were higher in the 45-year and over age groups. For the 2007 to 2010 period, in the 75-year and over age group, there was a downward trend in the cumulative incidence of suicide.

Age-specific rates for females were lower than that of males for all years. There was a statistically significant difference for males and females for all years (Poisson test, $p < 0.05$). The rates were stable across the years for most age groups, the five to 14-year age group being the exception. Males in the age group 25–34 years and those 75 years and over had the highest suicide rates. This contrasts to females in which the highest rates were found at age 45 years and older.

Figure 2 further corroborates observation that the 25 to 34-year age group consistently accounted for the greatest percentage of suicide cases for most years between 2007 and 2010, followed by the 35–44-year age group.

Sex distribution of suicides

The male to female ratio of suicides for the period of 2007 to 2010 was approximately 10:1. Figure 3 shows the percentage distribution by gender for this period. Tested against the proportion of males 0.49 and females 0.51 in the eligible Jamaican population, there was a statistically significant difference (binomial test, $p < 0.000$). Males were substantially

Table 1: Age-specific suicide rates 2002 to 2010 (males)

| | Age Group | | | | | | | | Total |
|------|-----------|-------|-------|-------|-------|-------|-------|------|-------|
| | 5–14 | 15–24 | 25–34 | 35–44 | 45–54 | 55–64 | 65–74 | ≥ 75 | |
| Year | | | | | | | | | |
| 2002 | 0.3 | 2.2 | 3.6 | 7.8 | 10.2 | 7.0 | 7.5 | 10.6 | 4.3 |
| 2003 | 1.0 | 3.8 | 5.7 | 3.5 | 7.9 | 9.5 | 11.3 | 10.4 | 4.7 |
| 2004 | 0.4 | 3.8 | 3.6 | 1.7 | 2.5 | 9.2 | 3.8 | 2.5 | 2.8 |
| 2005 | 0.7 | 3.7 | 6.7 | 5.1 | 4.0 | 5.1 | 5.6 | 7.5 | 4.0 |
| 2006 | 1.5 | 2.9 | 4.7 | 4.4 | 4.7 | 6.1 | 3.6 | 4.8 | 3.6 |
| 2007 | 0.7 | 0.9 | 5.4 | 5.1 | 6.5 | 5.2 | 8.6 | 9.8 | 3.8 |
| 2008 | 0.7 | 3.1 | 5.3 | 2.5 | 4.0 | 7.7 | 5.1 | 4.9 | 3.4 |
| 2009 | 0.4 | 2.6 | 6.3 | 5.8 | 3.1 | 12.7 | 6.7 | 7.2 | 4.4 |
| 2010 | 0.8 | 2.7 | 4.3 | 3.0 | 2.2 | 1.1 | 1.9 | 2.5 | 2.4 |

Table 2: Age-specific suicide rates 2002 to 2010 (females)

| | Age Group | | | | | | | | Total |
|-------------|-----------|-------|-------|-------|-------|-------|-------|------|-------|
| | 5-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65-74 | ≥ 75 | |
| Year | | | | | | | | | |
| 2002 | 0.4 | 0.4 | 0.5 | 0.0 | 0.9 | 0.0 | 3.4 | 0.0 | 0.5 |
| 2003 | 0.4 | 0.4 | 1.9 | 1.1 | 0.0 | 0.0 | 1.7 | 0.0 | 0.7 |
| 2004 | 0.7 | 1.6 | 0.0 | 0.5 | 0.9 | 1.4 | 0.0 | 0.0 | 0.7 |
| 2005 | 1.1 | 0.4 | 0.5 | 1.6 | 1.6 | 0.0 | 0.0 | 0.0 | 0.8 |
| 2006 | 0.0 | 0.4 | 0.5 | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 |
| 2007 | 0.4 | 0.4 | 0.0 | 0.5 | 0.8 | 0.0 | 0.0 | 0.0 | 0.3 |
| 2008 | 0.8 | 0.4 | 0.9 | 0.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.5 |
| 2009 | 0.0 | 0.4 | 0.4 | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 0.2 |
| 2010 | 0.0 | 0.8 | 0.9 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 |

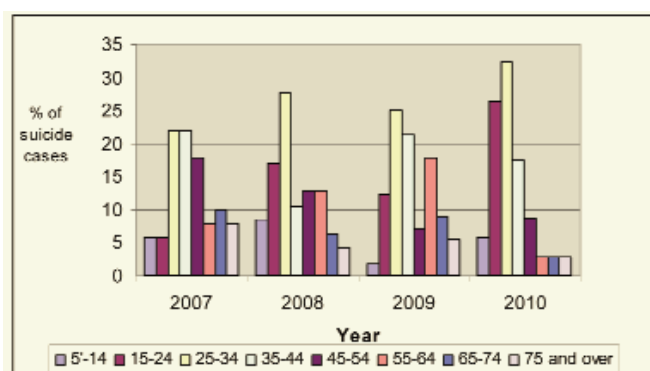


Fig. 2: Percentage of suicide cases for each year by age.

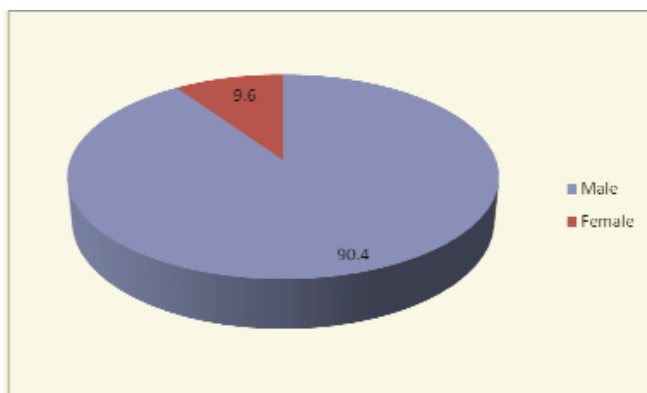


Fig. 3: Percentage distribution of suicides by sex for the period 2007 to 2010.

over-represented among the suicide cases, accounting for 90.4% of cases.

Distribution by location (parish)

The distribution of suicide cases by parish is illustrated in Fig. 4. Analysis of the data available (2007–2010) shows that the Kingston and St Andrew municipality (KSA) with the largest population, had the highest percentage of suicide amongst the parishes. The parish of St Thomas recorded the least number of suicide deaths for this period. Examination

of rates for the various parishes, however, indicated that Manchester, Portland and St Mary had the highest suicide incidence rates (Fig. 5).

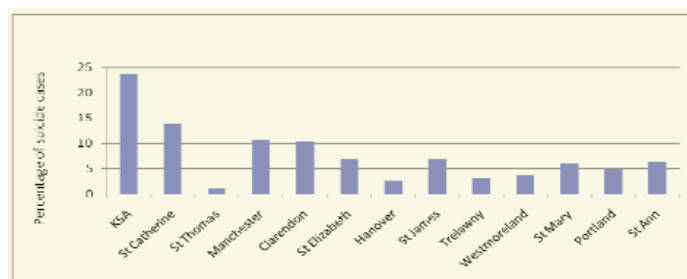


Fig. 4: Percentage of suicide cases according to parish for the period 2007 to 2010.

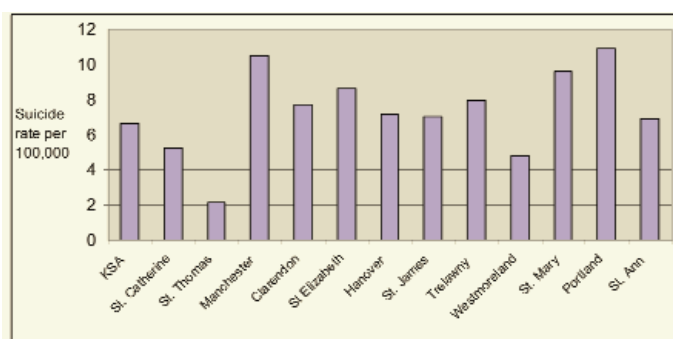


Fig. 5: Suicide rate according to parish for the period 2007 to 2010.

Methods of suicide

The distribution of methods used to commit suicide in Jamaica for the period 2007–2010 is displayed in Fig. 6. Hanging, the most commonly used method, was documented for approximately 78% of cases. Those using firearms were all males.

Suicide by time of year

Figure 7 shows the frequency distribution of suicide cases according to month for the period 2007–2010. The month of June had the greatest proportion of suicides (11.8%) while December had the least 4.3%.

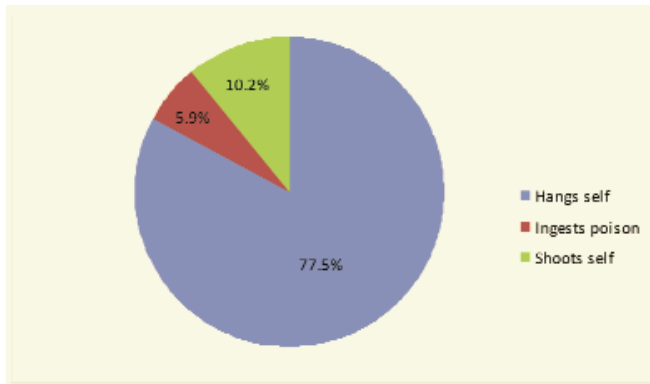


Fig. 6: Methods used by suicide cases (2007–2010).

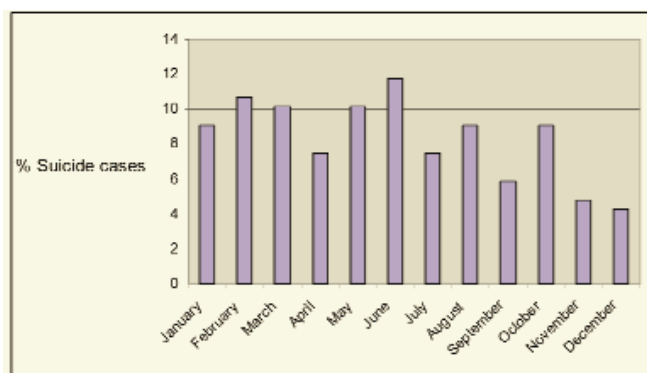


Fig. 7: Percentage of suicide cases per month for the period 2007 to 2010.

Occupation

Table 3 captures the occupational status of suicide cases during the period 2007–2010. Occupational status was categorized according to the occupational classification by the Statistical Institute of Jamaica (17). Professionals, senior officials and technicians accounted for the greatest proportion of suicide cases (13.4%). One in ten suicides was a casual labourer which constituted the overwhelming majority of elementary occupations. Approximately 19.8% of suicide cases were unemployed and 8.6% were pensioners.

DISCUSSION

In this study, we report a mean annual age-adjusted incidence of 2.1 per 100 000. Despite year to year fluctuations, suicide rates have not changed significantly over the 2002–2010 period. While there have been reported increases in many developing countries (18), the Jamaican rates are stable and relatively low and are consistent with data previously reported (11). The United States of America (USA), Canada and China have overall rates that are in the 10–20 per 100 000 range (10) which contrast with the rates found in Jamaica. The empirical data presented in this paper run counter to the popular notion of markedly increasing suicide rates. This, however, does not mean that suicides as a health problem should be ignored, as the negative consequences of

Table 3: Frequency distribution of suicide cases from 2007 to 2010 by occupation

| Occupation | Frequency | Percentage |
|---|-----------|------------|
| Professionals, senior officials, technicians | 25 | 13.4 |
| Clerks | 0 | 0 |
| Service workers and shop and market sales workers | 4 | 2.1 |
| Skilled agricultural and fishery workers | 15 | 8 |
| Craft and related trade workers | 7 | 3.7 |
| Plant and machine operators and assemblers | 1 | 0.5 |
| Elementary occupations | 20 | 10.7 |
| Occupation not specified | 18 | 9.6 |
| Student* | 18 | 9.6 |
| Inmate* | 6 | 3.2 |
| Pensioner* | 16 | 8.6 |
| Not available | 20 | 10.7 |

*These categories do not form part of the Statistical Institute of Jamaica's classification which focusses on the labour force but are included in the table for completeness.

any suicide extend beyond the individual to family, co-workers and friends. Moreover, there is a loss to the society whose resources would have been invested in that individual as well as a loss of future earnings to families.

In this study, the age-specific patterns of suicide also concur with those reported in the literature with rate spikes noted in young adults and at older ages (19). The greatest number of cases is generated from the 25–34-year age-group. Age-specific rates should be examined along with the population size of the age groups. These factors determine the number of cases generated and can help determine priority groups for intervention.

We confirmed a preponderance of male gender among the suicide cases which is consistent with patterns observed in many studies (20). The specific mechanism which drives this observable fact worldwide and in the Jamaican setting is not fully known. Reduced social networks and access to social capital and associated reduced resiliency may play a role. Although few persons utilized firearms to commit suicide, differential access to firearms may play a role; all those who used this method were males. Females are more likely to seek medical and psychiatric assistance than males (21) and this may partially explain the observed gender differences.

The pattern of suicides by time of year suggests that this is an area for further study and exploration. It is noted that a relatively small proportion of suicides occurred in the months of December in contrast to most other months. One may hypothesize (as is the case with descriptive epidemiological studies) that this is related to the 'December Christmas time good cheer' factor and allied community visits/outreach and family gatherings which reduce social isolation. Larger numbers cumulatively generated in future research studies, buttressed by additional data, can help to establish the pattern more definitively and identify explanatory factors which drive the observed patterns.

The preferred method of suicide varies in national studies worldwide. There is a high percentage of firearm

suicides in the USA which contrasts with Asian countries where suicide by pesticide poisoning is prevalent (22, 23). Hanging is the method of choice in Jamaica. This is the case in most countries studied (24). This may reflect the easier access to the materials and technical means necessary to employ this method. Additionally, the use of hanging may be influenced by historical familiarity/acceptability and socio-cultural mores. These dictate method used and how to commit suicide (25). Unlike in the USA where some focus is placed on restricting access to firearms as part of the strategy for suicide reduction, a parallel strategy for hanging in Jamaica would be difficult to implement as everyday materials such as ropes and articles of clothing cannot be restricted. Some 80–90% of suicide attempts by hanging result in fatality; a statistic comparable to attempts involving firearms (25).

The data, while providing some insight on the epidemiology of suicides in Jamaica, also argue for further studies if appropriate prevention and intervention programmes are to be developed. It is important to note that the database on suicides did not adequately detail the circumstances leading up to the suicides so as to allow ascertainment of precipitating factors or predisposing circumstances that may lend themselves to prevention efforts. Nevertheless, the analysis provides directions for further work and does improve knowledge of national, subnational and local suicide patterns. This is an important step towards greater elucidation of suicides and the resources that may be required to address this problem.

Limitations of this study are acknowledged. First, suicide is still a relatively rare event in Jamaica (2.1 per 100 000). Longer time periods with consequently larger numbers may be required to generate reliable indices and to more clearly distinguish patterns through subgroup analyses and identify statistically significant associations and differences. The events examined in this study are completed suicides. Improved understanding of the issue of suicides may be gained by analysis of not only suicides but attempted suicides. Additionally, this study is predominantly quantitative in its approach, and augmentation by qualitative inquiry to discern the 'why' of suicides is potentially very useful.

Under-reporting, under-recording and data quality are often a concern in suicide studies. However, in Jamaica, with a relatively small population and the dramatic nature of a suicide, under-reporting/under-recording is unlikely. Like most systems of recording such events, however, important details may be lost and comments on factors precipitating the event may either be sketchy or based on the reporters' perception about incidents. There is also the possibility of misclassifications, for example, a deliberate successful effort to commit suicide through a motor vehicle accident might be classified as the latter and not as a suicide. The extent to which this occurs is unknown.

In summary, age-adjusted rates of suicide indicate no significant changes in Jamaica over the period 2002–2010.

The cases are predominantly male and hanging is the method of choice. Continued surveillance of suicide as well as improved recording of the circumstances surrounding suicides is recommended to promote greater understanding of suicides which can ultimately inform intervention strategies.

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