

# Increasing Incidence of Admissions to a General Hospital for Deliberate Self-harm in Trinidad

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## ABSTRACT

**Background:** Deliberate self-harm and suicidal behaviour have become an increasingly common form of morbidity in the developing world. Suicidal behaviour is a major public health problem in Trinidad as the country has the second highest completed suicide rate in the English-speaking Caribbean. The objectives of this study were to determine the epidemiology of attempted suicide and self-harm at a specified site (the Port-of-Spain General Hospital) and compare it to previous studies done at the same site.

**Subjects and Methods:** This was investigated through a review of one years' admissions to the Port-of-Spain General Hospital for suicidal behaviour. Incidence was compared with a previous study completed at this site and reported in 1974. Comparison of the demographic characteristics of the sample with that of the previous study was also undertaken using chi-square analysis and significance testing through the use of t tests.

**Results:** A total of 368 referrals were made for attempted suicide or deliberate self-harm over the period indicating a fourfold increase in the incidence of this behaviour with a greater increase among males where the female to male ratio has declined from 4 to 1 to 2 to 1,  $p < 0.001$ ; the mean age of males was 34 years compared to females 22 ( $p < 0.0001$ ). The males were more likely to use violent means compared to females who were more likely to ingest tablets or bleach. Relationship difficulties were most commonly cited by both males and females as the reason for their attempt. There was a trend to greater propensity for this behaviour among Indo-Trinidadians as compared to Afro-Trinidadians in both females and males.

**Conclusions:** Increasing numbers of men are engaging in self-harm behaviour and are using more violent and physically harmful methods suggesting a greater degree of suicidal risk while women mainly engage in acts of ingestion with a much lower risk of death. The older mean age of these men suggests that their problems are presenting in middle adulthood while women are engaging in this behaviour in young adulthood. Suicidal behaviour or deliberate self-harm is a major public health problem in Trinidad.

# Aumento de la Incidencia de Ingresos al Hospital General por Auto-daño Deliberado en Trinidad

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## RESUMEN

**Antecedentes:** El auto-daño deliberado y el comportamiento suicida se han convertido cada vez más en una forma común de morbosidad en el mundo en vías de desarrollo. El comportamiento suicida es un serio problema de salud pública en Trinidad, como país que tiene la tasa más alta de suicidios efectuados en el Caribe anglófono. Los objetivos de este estudio fueron determinar la epidemiología del suicidio efectuado y el auto-daño en un lugar específico (el Hospital General de Puerto España) y compararla con estudios previos realizados en el mismo lugar.

**Sujetos y Métodos:** Esto fue investigado mediante una revisión de los ingresados de un año al Hospital General de Puerto España por comportamiento suicida. La incidencia fue comparada con un estudio

previo terminado en este sitio y reportado en 1974. La comparación de las características demográficas de la muestra con la del estudio previo se llevó a cabo usando un análisis de chi-cuadrado y pruebas de significatividad mediante el uso de tests *t*.

**Resultados:** Se produjeron un total de 368 casos referidos por intento de suicidio o auto-daño deliberado en el período en cuestión, lo cual indica que la incidencia de esta conducta aumentó en cuatro veces, con un mayor incremento entre los varones, y una disminución de la proporción hembras-varones de 4:1 a 2:1;  $p < 0.001$ ; la edad promedio de los varones fue 34 años en comparación con la de las hembras, 22 ( $p < 0.0001$ ). Los varones mostraron una tendencia mayor a usar medios violentos en comparación con las hembras, entre las que había una mayor probabilidad de ingerir tabletas o leña. Las dificultades en las relaciones constituyeron la explicación más comúnmente dada como causa del intento, tanto por los varones como por las hembras. Hubo tendencia a una mayor propensión a este comportamiento entre los indo-trinitenses en comparación con los afro-trinitenses, tanto en hembras como varones.

**Conclusiones:** Un número cada vez mayor de hombres se involucran en conductas auto-agresivas y están usando métodos más violentos y físicamente dañinos, lo que sugiere un grado mayor de riesgo de suicidio, mientras que las mujeres se entregan principalmente a actos de ingestión con riesgo mucho menor de muerte. La edad promedio mayor de estos hombres sugiere que sus problemas se presentan en medio de su adultez, mientras que las mujeres se entregan a estas conductas como adultos jóvenes. La conducta suicida y el auto-daño deliberado constituyen un problema principal de salud pública en Trinidad.

## INTRODUCTION

Suicidal behaviour has become one of the most important health problems in contemporary life particularly for young adults where suicide has emerged as one of the three leading causes of death. These increases are being observed in both the developed and the developing world (1). Attempted suicide or deliberate self-harm is thought to occur at a rate that is at least six times greater than completed suicide (2). "Self-harm", "attempted suicide", "parasuicide" and "deliberate self-harm" (DSH) are all terms which are often, but not always, used interchangeably. They all describe non-fatal acts of self-harm which arise for a variety of reasons. The WHO defines parasuicide as "an act with non-fatal outcome in which an individual deliberately initiates a non-habitual behaviour that, without intervention from others, will cause self-harm and which is aimed at realizing changes which the subject desired via the actual or expected physical consequences (3). The term parasuicide therefore originated out of the uncertainty about the intent of the self-harming behaviour, an uncertainty that arises out of the ambivalence in the person's mind about suicide. Deliberate self-harm is perhaps a better expression than parasuicide since there might always be uncertainty about whether suicide is the desired intent when individuals engage in this behaviour. The critical differentiating factor is then the intent with which the individual undertook the behaviour (4). The terms "Self-harm and deliberate self-harm include habitual behaviours such as self-cutting or the ingestion of a variety of substances including household poisons which occur without suicidal intent although there would be the risk of accidental death. The act itself is not necessarily a good predictor of the intentions of the self-harmer" (3). Self-harm can involve dif-

ferent degrees of risk to life ranging from a genuine wish to die to a means to cope with difficult life-challenges. The seriousness of the act is therefore not necessarily an indicator of the suicidal intent. The presence of depression and other underlying psychiatric illnesses and personality traits such as high impulsivity are far more correlated with the intent and motivation to die by self-harm (5).

There continues to be confusion about the use of terms in this area making comparison between studies, particularly across cultures, very difficult (4). This study therefore overcomes this difficulty by using the same criteria of admission to the same hospital separated only by time from a previous study at the same site (6).

The risk factors that have been reported to be correlated with deliberate self-harm include younger age, female gender, social isolation, unemployment, previous attempts and the presence of mental disorder (2). Relationship difficulties, maladaptive parenting and negative childhood experiences have also been implicated in the genesis of suicidal behaviour (7).

At a Caribbean regional workshop sponsored by the Pan American Health Organization in 2002, it was agreed that the problem of deliberate self-harm and attempted suicide was becoming increasingly relevant to the Caribbean particularly with regard to poisoning and self-mutilating behaviour (8). On the basis of the discussion emanating from this meeting, it was apparent that suicidal behaviour is increasing in frequency across the English-speaking Caribbean and is therefore becoming a major public health problem for the region.

Previous work in Trinidad, the southernmost island in the chain of English-speaking Caribbean countries, published

in 1974 but done between 1969 and 1970, found that females in the 15–24-year age group are at increased risk and attempted suicide was 3–4 times more common in females than males (9). The most common method utilized was ingestion of tablets and the next most often used was ingestion of household poisons (6). Although there was an equal distribution of individuals of African origin and East Indian origin reported in the study, there was a relatively greater representation of female East Indians among those being admitted for attempted suicide since at that time people of African origin were in the majority of the population served by the hospital (10). Deliberate self-harm and attempted suicide has already been shown to have increased in Barbados where a ten per cent increase was demonstrated over a ten year period (1974–1984). Here again, women were more likely to be admitted than men for this form of behaviour (11).

It has been proposed that the methods used in deliberate self-harm can distinguish men from women as the former are more likely to use more lethal methods and are therefore more likely to be successful and add to the rates of completed suicide. Other factors that distinguish men include the propensity for violence, presence of psychopathology such as substance abuse and the psychosocial differences in adjustment between males and females (12). It has been proposed that suicide and suicide attempts can therefore be separated by the presence of psychiatric disorder and male gender (13).

Suicidal behaviour also places a great demand on health services as these patients have to be admitted to hospital, once they present, and assessed by the mental health service of the hospital, if available, before discharge (2). This can result in hospital stays of up to 3 to 4 days. Understanding this behaviour and its associated risk factors is therefore an important public health priority.

## SUBJECTS AND METHODS

All patients presenting to hospitals with suicidal behaviour in Trinidad and Tobago are admitted as inpatients for observation and referred to the psychiatric consultation service for review before discharge. Deliberate self-harm or attempted suicide is defined in the Caribbean context as a non-fatal, deliberately initiated act of self-poisoning and/or self-injury (6, 11).

In the Port-of-Spain General Hospital, the referral is facilitated by a form which is filled out by one of the medical officers from the team treating the admission. The referral identifies the reason for the request including the nature of the suicidal attempt and the current medical status of the patient.

The Port-of-Spain General Hospital serves the catchment area defined by the borough of St George and the capital city of Port-of-Spain in the national census and so caters for an adult population of approximately 415 000 (14). The total population of the country is 1.25 million people so

that this General Hospital serves approximately 33% of the national population. Paediatric cases defined as aged less than or equal to 16 years are not admitted to this hospital but are referred to a separate Children's Hospital.

All the referral forms requesting psychiatric consultation for suicidal behaviour were reviewed for the one year period between October 2001 and October 2002. The consultants in charge of the psychiatric team would conduct weekly checks with the Accident and Emergency registry to ensure that every patient admitted for deliberate self-harm was referred for psychiatric consultation. This was done to confirm that case ascertainment was complete and the referrals accurately reflected the admissions for deliberate self-harm and suicidal behaviour.

It is hospital policy that all of these patients be referred before discharge but some do leave the hospital against medical advice before the consultation occurs and so would not be seen. Interviews were conducted on 79.9% (294 cases) of the patients referred by psychiatric staff and information regarding age, gender, reason for attempt, method of attempt, psychiatric history and previous suicidal attempts were obtained. For the remaining patients, the forms and their medical notes were reviewed. Ethical consent from the Hospital Ethics committee was granted and informed consent was obtained from the patients themselves with regard to the research process.

Comparisons by gender and ethnicity were undertaken as well as differences in method of attempt. Statistical analysis included calculation of crude incidence rates and significance testing of associations was undertaken using chi-square analysis and *t* tests. Comparison with the previous studies reported by Burke (6, 9, 10) was then conducted to establish trends and detect possible changes in self-harm behaviour over time.

## RESULTS

A total of 368 new cases of attempted suicide were admitted in the year reviewed. These 368 cases constitute 7.2% of the acute admissions for that year to the hospital. There were 247 females and 121 males, a female to male ratio of 2.04 to 1.

The females were younger, mean age 22.3 (standard deviation 5.2) than the males 34.1 (standard deviation 3.9) and the mean for the total sample was 26.1 (standard deviation 5.0). This age differential was significant ( $z = 2.07$ ;  $p = 0.019$ ).

The majority of females were in the 15–24-year age group (40.7%) while the majority of males were in the 35–44-year age group (47.1%). These differences were significant (Table 1).

A total of 42.1% (155/368) of the sample were either married or living with their partners. There were more males in this group 65/121 (53.7%) while only 36.4% of females (90/247) were so involved ( $z = 3.0$ ,  $p = 0.00135$ ). Most of the sample had achieved the level of secondary education 237/368 (64.4%). Males were slightly more likely to have

Table 1: Deliberate self-harm by age group and gender

	Male (%)	Female (%)	<i>p</i> -value
15–24	19 (15.7)	101 (40.9)	< 0.000
25–34	24 (19.8)	53 (21.5)	n/s
35–44	57 (47.1)	46 (18.6)	< 0.000
45–54	15 (12.4)	39 (15.8)	n/s
>55	6 (5.0)	8 (3.2)	n/s
<b>Total</b>	<b>121 (100)</b>	<b>247 (100)</b>	

received secondary education (90/121; 66.1%) compared to 59.5% (147/247) of females but this was not significant. Only 46% of the samples were employed (169/368). Males were more likely to be employed (66.9%; 81/121) compared to females 35.6% (88/247,  $z = 5.13$ ,  $p = 0.00003$ ).

### Incidence

The crude incidence was 89 per 100 000. The male incidence rate was 60.2 per 100 000 and the female rate 116.6 per 100 000. Compared with reported rates in 1974 (6), there was a four-fold increase in the total incidence (1974 total incidence - 23.8/100 000), a five-fold increase in men (1974 - 13.1/100 000) and a three-fold increase in women (1974 - 34.1/100 000).

Ingestion of tablets was also the most frequent method used in 47% of cases. The females were more likely to ingest tablets as their method of attempt: female to male ratio 5.4 to 1 [ $z = 7.49$ ,  $p < 0.000$ ] (Table 1). Ingestion of herbicides represented 25% of the cases and males were 2.2 times more likely to use this method than females ( $z = 2.98$ ;  $p = 0.0029$ ). Ingestion of bleach was next accounting for 16% of the cases, the gender distribution here reflected that for the overall sample, the female to male ratio was 2.4 to 1. Men were far more likely to use methods that involved self-inflicted injuries such as cutting and stabbing oneself, jumping from heights or shooting oneself. This form of deliberate self-harm accounted for 8% of the cases and the female to male ratio was 0.1 to 1 ( $z = 5.2$ ;  $p < 0.000$ ).

The given reasons for the suicidal gestures were similar across gender and in 79% of cases were due to domestic disputes either among members of family or arising out of ro-

Table 2: Distribution of attempted suicide by method and gender

Method	Gender		<i>p</i> -value
	Male (%)	Female (%)	
Ingestion of tablets	27 (22.3)	146 (59.1)	<0.000
Ingestion of bleach	17 (14.0)	42 (17.0)	n/s
Ingestion of lanate/gramoxone	42 (34.7)	49 (19.8)	0,0029
Physical self-harm*	25 (20.7)	3 (1.2)	< 0.000
Ingestion of other**	10 (8.2)	7 (2.9)	0.0262
<b>Total</b>	<b>121 (100)</b>	<b>247 (100)</b>	

\* Includes violent acts such as hanging, shooting oneself, stabbing oneself and other forms of serious self-mutilation

\*\*kerosene, paint thinner

matic relationship conflicts. Alcohol use prior to the attempt was involved in 53% of cases and there was no significant gender difference here (70 males - 57.9% and 125 females - 50.6%). Only 17 patients (5%) had a past psychiatric history or had sought help for their problems prior to the attempt (12 females and 5 males).

East Indians represented 45.7% while other ethnic groups were: Africans, 40.0% and Mixed ethnicity, 14.3%. Compared to the catchment population distribution of 35%, 51% and 11% respectively, this was significant ( $X^2 = 10.85$ ;  $p < 0.001$ ).

East Indians were significantly over-represented in the ingestion of herbicides (62.2%) and bleach (54.2%) while Africans were significantly over-represented in the ingestion of tablets 56.2% ( $X^2 = 11.64$ ;  $p < 0.001$ ).

Adjustment disorder was the most frequently diagnosed condition in those interviewed 150/294 (51.0%). Other diagnoses included major depression 61/294 (20.7%), generalized anxiety disorder 15/294 (5.1%), panic disorder 13/294 (4.4%), bipolar disorder 12/294 (4.1%) and borderline personality disorder 15/294 (5.1%). Other diagnoses included social anxiety disorder, impulse control disorder, schizophrenia, acute psychotic episode, paranoid personality disorder and antisocial personality disorder accounting for the remaining 9.5%.

Since this was an incidence study, we did not include those patients who had engaged in previous attempts but reviewing the interviews done and the case records reviewed, we found that a total of 40 additional admissions (26 females and 14 males) admitted to at least one previous attempt (10.9%) and 9 of this group of patients (7 females and 2 males) had made two or more previous attempts (2.4%).

### DISCUSSION

There are several interesting findings here when compared to previous research on this issue in Trinidad and Tobago, and Barbados. One of the most striking is the increase in deliberate self-harm among men particularly in the age group 35–44-years which seems to have contributed to the increased incidence of the phenomenon of deliberate self-harm presenting to this hospital. This of course parallels a general increase in suicidal attempts which has been reported in many industrialized countries and linked to changes in socio-economic conditions (15). In 1974, the age group that was reported to have the largest numbers of attempted suicide in both men and women was the 15–24-year age group (9). In 2002, this has remained so for women but has increased by 10 years in men. This suggests that a greater number of men are having difficulty adjusting to the demands of middle adulthood.

Methods of deliberate self-harm have long differentiated men and women and this is supported here as men were more likely to use more serious and life-threatening methods such as ingesting herbicides and indulging in violent acts such as hanging, jumping from heights, stabbing oneself and

other forms of self-mutilation. This has been proposed as the main contributing factor in explaining the higher rates of completed suicide among males and is illustrated in Trinidad and Tobago by a 3 to 1 male to female ratio (16).

There was a trend for the behaviour to be more common in married and cohabiting males while for females, single women seem more at risk. The census breakdown suggests that women are slightly more likely to be married than men but no age breakdown was available. The older age of the males might account for the significant representation of married and cohabiting males but it has been reported that marriage is a greater source of well-being in women than it is for men (17).

Burke's study in 1974 suggested that there was an equal distribution of attempted suicide between East Indians and Africans, however there seems to have been an increase in the prevalence in this behaviour among East Indians. However, it is unclear whether there were changes in the catchment area served by the Port-of-Spain General Hospital from where the proportion of East Indians may have come. Burke did not indicate the gross figures so it is impossible to compare at that level. The greater use of herbicides by East Indians may be a reflection of their closer historical connection to rural agricultural backgrounds and prevention at that level of the agricultural community remains minimal (14). In Barbados where the percentage of East Indians in the population was 1% in 1987, ingestion of herbicides accounted for only 4% of cases compared to 25% in the present study. Similarly, 87% of their cases were due to ingestion of tablets while only 47% used this method in Trinidad and Tobago (11).

Previous findings for completed suicide by poisoning (18) suggest that domestic conflicts are the primary cause for both deliberate self-harm and completed suicide. With the small numbers of cases with previous contact with psychiatric services, it may be that there is significant undiagnosed psychopathology in the community given the number of patients receiving major psychiatric diagnoses. This is especially significant for those with major depression and anxiety disorders which are more commonly associated with suicidal ideation (2). Easier access to psychiatric services and improved community mental health outreach programmes would be possible solutions to this problem. Community foci such as schools and places of religious worship could be utilized for this purpose. Prevention efforts must be targeted at improved resolution of family and relationship conflicts. In Barbados, 72% of attempts were also related to relationship conflicts (11) and similar findings have been reported from Australia (19).

New cases of deliberate self-harm are contributing to a heavy demand on health services and it is important that crisis intervention and mental health service contact be established in a way that ensures effective evaluation and treatment. Approximately, one person is admitted every day with this behaviour and there may be a need for psychiatric

screening in the Accident and Emergency department to provide for initial psychiatric assessment and appropriate follow-up that may diminish the need for inpatient admission for the more minor occurrences of deliberate self-harm. The benefits of psychosocial screening in Accident and Emergency units have been well documented (20).

In conclusion, interventions would include efforts toward better educating communities to the problem of deliberate self-harm and encouraging individuals to seek alternative means of resolving conflicts and dealing with relationship difficulties. Public education about emotional problem solving and safer storage and disposal of the possible means of suicidal behaviour would also be useful in this context. Education of physicians involved in primary care in order that they better identify and treat psychiatric disorders should also be prioritized.

Community detection and prevention strategies should be developed as a priority, especially in countries with limited resources

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