Suicide Attempt by Self-poisoning: Characteristics of Suicide Attempters Seen at the Emergency Room at the University Hospital of the West Indies

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ABSTRACT

Objective: *To document the characteristics of self-poisoning suicide attempters who were brought to the University Hospital of the West Indies (UHWI) Emergency Room and to outline the type of drug used in the attempt.*

Method: *This was a retrospective study conducted over the period 2005–2009. Data were gathered from patients' case records, log books and the hospital records using a questionnaire developed for this study. The questionnaire examined demographics, parameters of the drug ingested, patient's disposition, and reasons for attempt, final outcome and the type of discharge of patients who reported to the UHWI Emergency Room due to a suicide attempt by self-poisoning.*

Results: *Over the five-year period, 127 cases of suicide attempt by self-poisoning were reported. Significantly more females than males presented to the hospital due to self-poisoning (3:1,* $\chi^2 = 33.37$; $p < 0.001$*). Of this amount, 96 cases (75.6%) were females and 31 (24.4%) were males. The age group most recorded was 16–30 years (70.8%). The most common reason for the suicide attempt was an interpersonal conflict (52%). The drug category most often used in self-poisoning was analgesics (52%) with acetaminophens being the most common (26.2%).*

Conclusion: *These findings are consistent with global suicide trends and indicate an urgent need to develop and implement national preventative and treatment measures for groups known to be at risk of suicidal attempts.*

Keywords: Jamaica, self-poisoning, suicide attempt

Intento de Suicidio por Envenenamiento: Características de los que Intentan Suicidio, Observadas en la Sala de Emergencia del Hospital Universitario de West Indies

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RESUMEN

Objetivo: *El objetivo del presente trabajo es, por un lado, documentar las características de personas con ánimo suicida, trasladadas a la Sala de Emergencia del Hospital de West Indies (HUWI), tras el intento de cometer suicidio por envenenamiento, y por otro, describir el tipo de medicamento utilizado en el intento.*

Método: *Se trata de un estudio retrospectivo llevado a cabo en el periodo 2005–2009. Se recogieron datos provenientes de las historias clínicas de los pacientes, los diarios, y los archivos del hospital, usando un cuestionario desarrollado específicamente para este estudio. El cuestionario examinó los datos demográficos, los parámetros del medicamento ingerido, la disposición del paciente, y las razones del intento, así como la evolución clínica y el tipo de alta de los pacientes reportados en la Sala de Emergencias del HUWI, debido a un intento suicida por envenenamiento.*

Resultados: *En el periodo de cinco años, se reportaron 127 casos de intento de suicidio por envenenamiento. Significativamente más hembras que varones se presentaron al hospital debido a envenenamiento (3:1,* $\chi^2 = 33.37$; $p < 0.001$*). De este número, 96 casos (75.6%) fueron hembras y 31*

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(24.4%) fueron varones. El grupo etario más registrado fue el de 16–30 años (70.8%). La razón más común para la tentativa de suicidio fue un conflicto interpersonal (52%). La categoría de medicamentos usada más a menudo para el envenenamiento fue la de los analgésico (52%), siendo el acetaminofén el más común (26.2%).

Conclusión: *Estos hallazgos se corresponden con las tendencias mundiales al suicidio y apuntan a una urgente necesidad de desarrollar e implementar medidas nacionales para la prevención y el tratamiento para grupos conocidos por hallarse en riego de intentos suicidas.*

Palabras claves: Jamaica, autoenvenenamiento, intento de suicidio

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INTRODUCTION

According to the World Health Organization, suicide or self-inflicted injuries ranked as the 16th leading cause of mortality in 2004 (1). Recent research has also indicated that suicide rates are on the rise within Latin America and the Caribbean (2). Suicide is now known to be a phenomenon in low, middle and high income countries and occurs in all sociodemographic groups (1). Suicidal behaviour includes clear, unambiguous acts of completed suicide as well as a heterogeneous spectrum of suicide attempts. These acts range from highly lethal attempts to those of a lower lethality and occur in the context of a social crisis with a strong element of an appeal for help (3).

There has been a general trending upwards of suicidal behaviour globally, especially among younger individuals (1). Global statistics from 2004 ranked suicide at 8th in causes of disease burden for both genders in the age group 15–44 years (2). Among young people 15–25 years old, suicide is noted to be one of the five leading causes of death for both genders (4). The rate of attempted suicide varies from one country to the next with estimates ranging from 10–40 times more frequent than completed suicides (5).

Generally, men have a higher reported rate of completed suicide, whereas women have a higher rate of attempted suicide (1, 2, 6, 7). Men tend to use means that are more lethal, plan the suicide attempt more carefully, and avoid detection. In contrast, women tend to use less lethal means of suicide, which carry a higher chance of survival, and they, more commonly, express an appeal for help by conducting the attempt in a manner that favours discovery and rescue (7). Also much of the literature shows that previous attempts at suicide are strong predictors of future attempts (1, 4, 7–9).

Additionally, approximately 60% of all suicides occur in persons with a mood disorder (8) and the rest occur in persons with various other psychiatric conditions, including schizophrenia, alcoholism, substance abuse and personality disorder such as borderline or antisocial personality disorder (1, 2, 6, 7).

The availability of highly lethal suicide methods and rates of suicide appear to be related (1, 2). Pesticides are a more common method of self-poisoning in developing countries, particularly in China, India and Sri Lanka (4). Within Latin America and the Caribbean, self-poisoning, firearms and suffocation were the three most common methods used in suicide (2). These findings strongly support earlier reports on the role of pesticide poisoning in attempted and completed suicide in developing countries (10–15).

In many countries, the healthcare delivery systems are burdened by the need to manage suicide attempters in their emergency rooms. The majority of individuals who attempt suicide have been shown to be adolescents and young adults, and these attempters go on to have an increased risk of repeating such behaviour in the future (16–18).

Examining suicide methods provides useful insight into addressing the issues of prevention and treatment. Consequently, the present study sought to determine if the characteristics of suicide attempters from self-poisoning who were brought to the University Hospital of the West Indies (UHWI) Emergency Room (ER) would be consistent with the trend observed globally as well as to determine the type of drug most often used in self-poisoning attempts.

SUBJECTS AND METHODS

This study was a retrospective survey of the patients who presented with a history of self-poisoning to the Emergency Medicine Division of the UHWI. The patients included in the study were patients who presented with drug-induced or chemically-induced self-poisoning over the five-year period 2005–2009.

The data collection instrument was a questionnaire completed by the emergency medicine consultant assigned to the study. The instrument asked questions related to demographics of the patients, parameters of the drug ingested, patient's disposition, reasons for attempt, final outcome and the type of discharge the patient received. The information was collected from the patients' case records, log books and the hospital records.

The data were analysed using SPSS version 12.0. Frequencies, cross tabulations and Fisher's exact test analysis were performed on the data.

RESULTS

The study identified 127 non-fatal self-poisoning cases for the time period under investigation. The demographic characteristics of the sample are presented in Table 1. There

were 96 females (75.6%) and 31 males (24.4%) reporting to the ER because of self-poisoning (3:1, $\chi^2 = 33.37$; $p < 0.001$).

Table 1: Demographic characteristics of surviving self-poisoning patients

		Frequency (%)
Gender	Male	31 (24.4)
	Female	96 (75.6)
Age range (years)	10 – 15	11 (8.7)
	16 – 20	32 (25.2)
	21 – 25	29 (22.8)
	26 – 30	29 (22.8)
	31 – 35	11 (8.7)
	36 – 40	7 (5.5)
	41 – 45	5 (3.9)
	46 – 50	2 (1.6)
	51 – 55	1 (0.8)
Nationality	Jamaican	123 (96.9)
	Indian	1 (0.8)
	Canadian	1 (0.8)
	Trinidadian	1 (0.8)
	Other	1 (0.8)
Marital status	Common-law	37 (29.1)
	Married	12 (9.4)
	Separated	2 (1.6)
	Single	31 (24.4)
	Not recorded	45 (35.4)
Employment status	Employed	31 (24.4)
	Unemployed	19 (15.0)
	Not recorded	39 (30.7)

The age range from 16–30 years (70.8%) represented the largest number of cases for suicide attempts with the most cases being reported for persons between the ages of 16–20 years old (25.2%). The most frequent union status recorded was 'common-law relationship' (29.1%) followed by 'single' (24.4%). Marital status information was missing for 45 subjects. By grouping married and common-law into 'in relationship' and separated and single into 'not in a relationship', it was found that males attempting suicide were more likely to be in a relationship than females attempting suicide (odds ratio = 6.43; $p = 0.019$).

In terms of age, it was found that persons older than 30 years who attempted suicide were more likely to be in a relationship than those 30 years and younger [odds ratio = 15.5; $p = 0.001$] (Table 2).

In terms of employment status, the most recorded status was 'student' (29.9%) followed by 'employed' (24.4%).

The most common reason associated with attempted suicide cases was interpersonal conflict (52%). To a much smaller extent, 10.2% of patients noted that issues with school/work were their reason for the attempt (Table 3).

Table 3: Reasons for attempting suicide

Reason	Frequency (%)
person to person conflicts	66 (52.0)
issues with school/work	13 (10.2)
issues with self including attention seeking	8 (6.3)
mentally challenged	4 (3.1)
reason not identified or not recorded	36 (28.4)
Total	**127**

Most of the patients seen had no psychiatric history (86.6%); however, 13.4% of patients did report such a history. Almost all patients were referred to a psychiatrist (99.2%). Only 27.6% of persons were admitted to hospital and most persons stayed between 0 and 12 hours (62.2%).

In 57.5% of cases, only one type of agent was used for self-poisoning while in 22% of cases two agents were involved; in 16.5% of the cases three agents were involved and more than three agents were involved in 3.9% of the cases. Table 4 presents the type of agents used in the cases. Pharmaceuticals were the predominant agents involved, with acetaminophen being the most common.

The category of agents most commonly used in self-poisoning attempts was analgesics accounting for approximately 52% of the cases. Within this category, acetaminophens were the most used type of analgesics (26.2%). In all categories of agents, females used chemicals to a greater extent than males; this was particularly evident in the industrial chemicals category where significantly more females than males used these chemicals in suicide attempts ($p = 0.019$).

Table 2: Differences in marital status by age and gender

	In a relationship (married or common-law)	Not in a relationship (single or separated)	Odds ratio	Fisher's exact *p*
Number	49	33		
By age				
> 30 years	16	1	15.5	0.001
≤ 30 years		33	32	
By gender				
Male	15	2	6.8	0.011
Female	34	31		

Table 4: Types of chemical agents used in self-poisoning cases

Agents	Frequency (%)	Male	Female	Fisher's *p* test
Analgesics		**13**	**51**	**0.716**
Acetaminophen	30 (14.1)	4	26	
NSAIDs	21 (9.9)	6	15	
Aspirin	13 (6.1)	3	10	
CNS Drugs		**11**	**41**	**0.848**
BDZ	19 (8.9)	1	18	
Alcohol	10 (4.7)	2	8	
Antipsychotic (with or without Benztropine)	9 (4.2)	4	5	
Antidepressants	11 (5.2)	4	7	
Antiepileptics	3 (1.4)	0	3	
Miscellaneous Drugs		**8**	**40**	**0.322**
Antihistamine	12 (5.6)	0	12	
Anti-infectives	15 (7.0)	5	10	
Antihypertensive/Antidiabetic	11 (5.2)	2	9	
Caffeine/Xanthines	10 (4.7)	1	9	
Industrial Chemicals		**12**	**18**	**0.019**
Pesticide/Herbicide/Rat poison	10 (4.7)	6	4	
Bleach	7 (3.3)	2	5	
Hydrogen peroxide	3 (1.4)	1	2	
Detergents/Disinfectants	4 (1.9)	1	3	
Paint/Kerosene oil/Acetone	3 (1.4)	1	2	
Other	19 (8.9)	4	15*	–
Agent unknown	3 (1.4)	0	3*	–
Total	**213**			

* Eliminated from total for Fisher's exact test analysis

DISCUSSION

The results from this study revealed that most of the persons who reported to the ER over the period 2005–2009 for suicide attempt by self-poisoning were females, a finding that is consistent with previous research (1, 2, 4, 19). In fact, the ratio of three times likely in females is consistent with most current World Health Organization data for Jamaica (20) and thus suggests that females are at a greater risk of attempting suicide. This was found to be irrespective of whether they were in a relationship or not. These findings reflect some inconsistence with global trends where married females have been found to be more likely to attempt suicide (19, 21).

For males, however, while having a lower potential for suicide attempt by the methods described in this study, being in a relationship was the greater risk suggesting that relationships that exist did not form any protection. Also consistent with the literature is the finding that most of the cases reported represented persons in the age range 16–30 years old. This supports research that indicates that adolescents and young people are most at risk for suicide attempts (1, 2, 19). Additionally, for the older adults, the relationships formed did not provide protection, as they were more likely to attempt suicide.

Also, there were no significant variations in the characteristics of patients in respect to employment status. In fact, most patients were either students or employed. This finding is supported by Nock *et al* who found that there was no relationship between employment history or status and suicidal behaviour (21).

The most common reason reported for attempting suicide was interpersonal conflict; this is also consistent with the literature that interpersonal conflict is among the top stated reasons for suicide attempts especially among young people (22–24). Fetsch *et al* pointed out that persons may be aware of the escalation in their risk for suicide but often do not seek help because they feel the problem will go away by itself or they wanted to try and solve it on their own (23). However, when the problem worsens so does their suicidal ideation and suicide attempts may follow. Adolescents and young people are particularly prone to developing suicidal ideations because of the egocentric thinking style associated with that period of life. Added to that is the fact that adolescents often have very few life experiences and limited problem solving skills, causing suicide to seem like the best option out of a difficult interpersonal relationship (23).

Issues at school or work were also reported as reasons for attempting suicide. Low school performance especially

among adolescents has been found to be linked to suicide attempts. Dearden *et al* found that persons who were underperforming in school reported having lower self-efficacy and lower instructional mastery which was associated with development of suicidal ideation and engaging in high risk behaviours (7).

History of a psychiatric illness was not a predominant characteristic of patients who attempted suicide and represent only 13.4% of patients who came to the ER. This is an interesting finding as extensive research has shown that a mental disorder is strongly associated with suicidal ideation and attempts (1, 2, 7, 19, 20). However, there is a possibility that this is an under-representation as some of these patients may in fact have a psychiatric illness that has been undiagnosed up to the point of their ER visit.

The most frequently used category of substances in self-poisoning was analgesics and among these acetaminophens were the drug of choice. These findings are consistent with those of Prescott *et al* who found in his study that paracetamol and ibuprofen were the most over ingested drug (25). This is likely to be linked to the availability and accessibility of these drugs.

Females were found to be more likely to use industrial chemicals in self-poisoning than males. Industrial chemicals have been found to be more lethal than those most commonly used in drug overdose (3). This finding is inconsistent with the literature that reflects that men would be more likely to use toxic types of self-poisoning (11, 13).

A major limitation of this study is the modest sample size and the fact that the patients in this sample were only those brought to the ER at a single hospital which may not reflect the pattern of other self-poison patients nationally, thereby limiting the generalizability of these findings. Another limitation is that the data gathered did not capture whether or not the patients had made previous suicide attempts. This information would be very important in determining similarities between Jamaican suicide attempters and global patterns of repeated suicide attempting. Also, in a number of the cases information about certain characteristics of the patient was not recorded which led to those patients' information being excluded from some analyses.

Despite these limitations, the findings of this study highlight the trending characteristics of persons who have attempted suicide by self-poisoning. It provides mostly consistent data to those presented by numerous global researchers and indicates a cross-cultural pattern for suicide risk factors.

Self-poisoning is known to be among the top three modes of suicide attempt or completion and depending on the type of drug ingested, the morbidity and mortality rate can be high. This pattern unchecked can result in greater economic burden by way of loss of human capital as well as psychological trauma for the families left behind.

Consequently, it demonstrates an urgent need to implement preventative and intervention strategies to combat the disease of suicide. This would involve national emphasis and awareness campaigns and measures. It also involves accurate and appropriate assessments of those persons deemed to be at risk.

Further research into the islandwide prevalence of attempted suicide by self-poisoning is needed to obtain a clear image of the national pattern.

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REFERENCES

1. World Health Organization. The global burden of disease: 2004 update. Geneva: WHO; 2008.
2. Pan American Health Organization. Suicide mortality in the Americas: regional report. Washington DC: PAHO; 2009.
3. Fathelrahman AI, Ab Rahman AF, Mohd Zain Z. Self-poisoning by drugs and chemicals: variations in demographics, associated factors and final outcomes. Gen Hosp Psychiatry 2001; **30 (Suppl 5):** 467–70.
4. World Health Organization. World Health Report 2001: Mental health, new understanding, new hope. Geneva: WHO; 2001.
5. Schmidtke A, Bille-Brahe U, DeLeo D, Kerkhof A, Bjerke T, Crepet P et al. Attempted suicide in Europe: rates, trends and sociodemographic characteristics of suicide attempters during the period 1989–1992. Results of the WHO/EURO Multicentre Study on Parasuicide. Acta Psychiatrica Scandinavica 1996; **93:** 327–8.
6. Bertolote JM, Flieshmann A, De Leo D, Bolhari J, Botega N, De Silva D et al. Suicide attempts, plans and ideations in culturally diverse sites: the WHO SUPRE:MISS community survey. Psychological Medicine 2005; **35:** 1457–65.
7. Dearden KA, De La Cruz NG, Crookston BT, Novilla LB, Clark M. Adolescents at risk: depression, low academic performance, violence and alcohol increase Bolivian teenagers' risk of attempted suicide. Journal of Health Education 2005; **8:** 104–19.
8. Bostwick JM, Pankratz VS. Affective disorders and suicide risk: a reexamination. Am J Psychiatry 2000; **157 (Suppl 12):** 1925–32.
9. Comtois KA. A review of interventions to reduce the prevalence of parasuicide. J Am Psychiatr Assoc 2002; **53 (Suppl 9):** 1138–43.
10. Latha KS, Bhat SM, D'Souza P. Suicide attempters in a general hospital unit in India: their socio-demographic and clinical profile – emphasis on cross-culutral aspects. Acta Psychiatrica Scandinavica 1996; **94:** 26–30.
11. Eddleston M. Patterns and problems of deliberate self-poisoning in the developing world. QJM Monthly Journal of the Association of Physicians 2000; **93:** 715–31.
12. Phillips MR, Li X. Suicide rates in China, 1995–99. Lancet 2002; **359:** 835–40.
13. Phillips MR, Yang G, Zhang Y, Wang L, Ji H, Zhou M. Risk factors for suicide in China: a national case-control psychological autopsy study. Lancet 2002; **360:** 1728–36.
14. Gunnell D, Eddleston M. Suicide by intentional ingestion of pesticides; a continuing tragedy in developing countries. Int J Epidemiol 2003; **32:** 902–9.
15. Eddleston M, Phillips MR. Self poisoning with pesticides. British Medical Journal 2004; **328:** 42–4.
16. United Nations Department for Policy Coordination and Sustainable Development. Prevention of suicide. Guidelines for the formulation and implementation of national strategies. New York: United Nations; 1996.
17. Hulte´n A, Wasserman D, Hawton K, Jiang GX, Salander-Renberg E, Schmidtke A et al. Recommended care for young people (15–19 years) after suicide attempts in certain European countries. Eur Child Adolesc Psychiatry 2000; **9:** 100–8.

18. Commonwealth Department of Health and Family. Youth suicide in Australia; 2007.
19. Fleischmanni A, Bertolote JM, De Leo D, Botega N, Phillps M, Sisask M et al. Characteristics of attempted suicides seen in emergency-care settings of general hospitals in eight low- and middle-income countries. Psychological Medicine 2005; **35:** 1467–74.
20. Varnik P. Suicide in the world. Int J Environ Res Public Health 2012; **9:** 760–71. DOI: 10.3390/ijerph9030760.
21. Nock MK, Guilherme B, Bromet EJ, Alonso J, Beautrais A, Bruffaerts R et al. Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. Br J Psychiatry 2008; **192:** 98–105.
22. Johnson JG, Cohen P, Gould MS, Kasen S, Brown J. Childhood adversities, interpersonal difficulties and risk for suicide attempts during late adolescence and early adulthood. Archives of General Psychiatry 2002; **59 (Suppl 8):** 741–9.
23. Fetsch RJ, Collins CL, Whitney D. Preventing youth and adult suicide: fact sheet. Colorado State University Extension; 2010. Available from: http://www.ext.colostate.edu/pubs/consumer/10213.html
24. You S, Van Orden KA, Conner KR. Social connections and suicidal thoughts and behaviours. Psychol Addict Behav 2011; **25 (Suppl. 1):** 180–4.
25. Prescott K, Stratton R, Freyer A, Hall I, Le Jeune I. Detailed analysis of self-poisoning episodes presenting to a large regional teaching hospital in the UK. Br J Clin Pharmacol 2009; **68:** 260–8.