

Epidemiological issues regarding suicides in Ecuador: an 8-year report

Fabrizio González-Andrade · Ramiro López-Pulles ·
Santiago Gascón · Javier García Campayo

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Abstract

Aim The aim of this study was to analyze the epidemiological issues related to suicide in Ecuadorians.

Subject and methods This is an observational, descriptive, and epidemiological study. The data used in this study arise from the National Institute of Statistics and Censuses register. The study analyzed gender, sex, and method used in suicide and undefined cases.

Results Every year in Ecuador 801 individuals die by suicide, with a prevalence rate (PR) of 60.55 deaths per million population (pmp). Suicide is the cause of 1.4% of all deaths in Ecuador. By gender, men account for 70.96% (PR=42.49 pmp), while the percentage in women is only 29.04% (PR=17.58 pmp). The male to female ratio is ~2:1; 76.79% of all the cases involved individuals between 15 and 50 years of age. The most common method of suicide is hanging, strangulation, or suffocation (44.35%), followed by unspecified chemicals (20.37%) and pesticide poisoning

(20.07%). Every year in Ecuador 352.6 individuals die by unspecified events or undetermined intents. These events could be a source of hidden suicides. By gender, men account for 76.39% (PR=20.35 ppm). The male to female ratio is ~3:1.

Conclusion Suicide in Ecuador has increased in a constant and progressive way, even though there is major under-reporting of these cases. The main method to commit suicide was hanging followed by pesticide poisoning. Suicide prevalence rates were similar to neighboring countries in South America, with the exception of Uruguay. Unspecified events or undetermined intents could be a source of hidden suicides, a fact that needs further analysis.

Keywords Suicide · Ecuador · Epidemiology · Public health · Unspecified event · Pesticides

Abbreviations

PR Prevalence rate
pmp Per million population
PMR Proportionate mortality ratio

F. González-Andrade (✉)
Faculty of Medical Sciences, Central University of Ecuador,
Sodiro N14-121 e Iquique,
Quito, Ecuador
e-mail: fabriciogonzaleza@yahoo.es

R. López-Pulles
Biomedical Center,
Central University of Ecuador (Quito) and UniAndes (Ambato),
Quito, Ecuador

S. Gascón
Forensic Medicine Department, Faculty of Medicine,
University of Zaragoza,
Zaragoza, Spain

J. García Campayo
Department of Psychiatry, “Miguel Servet” University Hospital,
Zaragoza, Spain

Introduction

Suicide in Ecuador has long been neglected and poorly understood by the Ecuadorian society which has been very conservative in dealing with this problem. It has been in the last decade when the community has begun to discuss this topic and other related issues in an open and honest way, especially to promote the health of marginalized populations (López-Cevallos and Chi 2010) and to reduce the socioeconomic inequality in Ecuador that affects access to health care (Parkes et al. 2009).

Suicide is the result of an act deliberately initiated and performed by a person in full knowledge or expectation of its fatal outcome (Brundtland 2001). According to a 2006 report of the World Health Organization (WHO) over 1 million people commit suicide every year, which is more than the combined annual deaths from homicides and wars (CIS 2009). Suicide accounts for roughly 877,000 lives worldwide (Mann et al. 2005), which represents 1.5–1.8% of the global burden of disease (Joe et al. 2006), and it is expected to increase to 2.4% by the year 2020 (Bertolote and Fleischmann 2002). Lowering suicide rates has become a key mental health target in many developed countries (Paton et al. 2001; Hansen and Pritchard 2008; Joe et al. 2008).

Suicide is a major health concern in Latin America also (World Health Organization 2009a), despite reporting regionally the lowest suicide rate in the world with a rate of 65 per million population (pmp), in comparison with Eastern Europe which has the highest annual rates, where ten countries reported more than 270 pmp, and the USA which reported a rate of 110 pmp (World Health Organization 2009b).

Some authors (Pritchard and Hean 2008) reported significant differences in the patterns of male and female younger aged suicide vs undetermined deaths in Ecuador and other Latin American countries and highly significant patterns of suicide to undetermined deaths compared to the average developed country. In that study, Ecuador showed a suicide rate of 85 pmp in male and 46 pmp in female young adults between 25 and 34 years and a rate of undetermined deaths of 202 pmp in men and 26 pmp in women, with a ratio of suicide to event of undetermined intent of 2.38 in men and 0.57 in women during the 3-year period analyzed (1998–2000). This study suggests that there is a strong possibility of hidden suicides among these high levels of events of undetermined intent (Pritchard and Amanullah 2007).

Furthermore, these calculations are based on officially reported data; hence, suicide data are hidden and underreported for variable reasons such as the prevalence of social and cultural attitudes. Underreporting of suicide worldwide ranges between 20 and 100%, which underlines the importance of bringing about corrections and improvement of this approach (Bertolote and Fleischmann 2002). Almost 85% of suicides occurred in low and middle income countries, such as African, Asian, and Latin American countries (Krug et al. 2002).

Suicide is a preventable cause of death and attempted suicide can be up to 40 times more common than completed suicide (Hultén et al. 2000); up to 83% of suicide patients previously visited a primary care physician within a year before of their death (Luoma et al. 2002) and up to 66% within a month (Andersen et al. 2000). Many of those who attempt suicide require medical attention and they are at high risk of completing suicide (Bennewith et al. 2002). Suicide affects everyone, but some groups are at higher risk than

others. Men are four times more likely than women to die from suicide. However, three times more women than men report attempting suicide. In addition, suicide rates are high among young people and those over the age of 65 (Centers for Disease Control and Prevention 2008).

Major depressive disorders and bipolar disorders are associated with about 60% of suicides (Bertolote et al. 2003). Other related factors include alcohol and drug abuse, lack of access to psychiatric treatment, attitudes toward suicide, help-seeking behavior, physical illness, marital status, age, and sex (Lewine and Shriner 2009). According to a national report (PAHO/OPS 2007), the main reasons for psychiatric consultation in Ecuador were violence and abuse, alcoholism, and suicide attempts.

There are a number of possible explanations for these rising suicide trends: loss of social cohesion, breakdown of traditional family structure (Wasserman et al. 2005), growing economic instability and unemployment (Hintikka et al. 2009), and finally, rising prevalence of depressive disorders (Kelly et al. 2009).

The aim of this study is to analyze the epidemiological aspects related to suicide in Ecuadorian victims and to identify a pattern of this problem that allows health authorities to improve future programs of prevention.

Material and methods

Study design This is an observational, descriptive, and epidemiological study of case series.

Source of information The data used in this study arise from the National Register of Hospital Admissions/Discharges and the National Mortality Register, both administered by the National Institute of Statistics and Censuses (INEC 2010). This register is nationally based, run and funded by the government. The data collected cover an 8-year period between 2001 and 2008. The register has been extensively used in former epidemiological studies (González-Andrade and López-Pulles 2010a, b).

Study variables The study analyzed gender, sex, mechanism of death, and ethnic group. The cause of death was described according to the *International Classification of Diseases, Tenth Revision* (ICD-10) (World Health Organization 2007).

Definitions used *Suicide* is defined as a death resulting from the use of force against oneself when a preponderance of the evidence indicates that the use of force was intentional. This category includes deaths of persons who intended only to injure rather than kill themselves, deaths associated with risk-taking behavior that is associated with

a high risk for death without clear intent to inflict fatal injury (e.g., “Russian roulette”), and suicides involving only passive assistance to the decedent (e.g., supplying the means or information needed to complete the act). The category does not include deaths caused by chronic or acute substance abuse without the intent to die or deaths attributed to autoerotic behavior (e.g., self-strangulation during sexual activity). *Suicidal behavior* is any deliberate action with potentially life-threatening consequences, such as taking a poison or deliberately using a firearm. *Undetermined intent* is used when a death results from the use of force or power against oneself or another person for which the evidence indicating one manner of death is no more compelling than evidence indicating another. *Unintentional firearm* is used when a death results from a penetrating injury or gunshot wound from a weapon that uses a powder charge to fire a projectile and for which a preponderance of evidence indicates that the shooting was not directed intentionally at the decedent.

The following definitions were used for *methods of injury*. *Firearm*, method that uses a powder charge to fire a projectile; *sharp instrument*: knife, razor, machete, pointed instrument (e.g., chisel or broken glass); *blunt instrument*: club, bat, rock, or brick; *poisoning*: street drug, alcohol, pharmaceutical, carbon monoxide, gas, rat poison, or insecticide; *hanging/strangulation/suffocation*: hanging by the neck, manual strangulation, or plastic bag over the head; *personal weapons*: hands, fists, or feet; *fall*: being pushed or jumping; *drowning* is inhalation of liquid in a bathtub, lake, or other source of water/liquid; *fire/burn* is inhalation of smoke or the direct effects of fire or chemical burns; *shaking*: shaking a baby, child, or adult; *motor vehicle*: car, bus, or motorcycle; other transport vehicle like train or airplane; *intentional neglect* like starvation, lack of adequate supervision, or withholding of health care; any method other than those listed above and method not reported or not known.

Statistical analysis Mortality rate was calculated with the formula $\text{deaths/population} \times 1,000$; and proportionate mortality ratio (PMR) was calculated with the formula $\text{deaths by suicide/total deaths} \times 100$. The prevalence rate (PR) was calculated per million population.

Results

Table 1 shows deaths by suicide or intentional self-harm, method used, and year (codes X60–X84). Table 2 details the deaths by event of undetermined intent or unintentional homicides (codes Y10–Y34). Table 3 shows the distribution of deaths by gender and age group. In all cases . the PR

was calculated. Finally Table 4 provides a comparison of suicide PR by gender and by country.

Suicide Every year in Ecuador 801 individuals die by suicide, with a PR of 60.55 deaths pmp. Suicide is the cause of 1.4% of all deaths in Ecuador. By gender, men account for 70.96% with a PR of 42.49 pmp, while the percentage in women is only 29.04% of the total, with a PR of 17.58 pmp. The male to female ratio is ~2:1; 76.79% of all the cases involved individuals between 15 and 50 years of age. The most common method of suicide is hanging, strangulation, or suffocation (44.35%), followed by unspecified chemicals (20.37%) and pesticide poisoning (20.07%).

Unspecified event or undetermined intent Every year in Ecuador 352.6 individuals die by unspecified events or undetermined intents. These events could be a source of hidden suicides. By gender, men account for 76.39% with a PR of 20.35 ppm, while women account for only 23.61% with a PR of 6.29 ppm. The male to female ratio is ~3:1; 65.69% of all the cases involved individuals between 15 and 50 years of age. In relation to method of death the unspecified events are the most common method used (22.65%), followed by pesticides (9.56%) and gunshot with a small weapon (6.78%). The suicide/undetermined intent rate for all ages is 2.27 (6,412/2,821).

Suicide pattern The profile of Ecuadorian suicide is a man, Mestizo (admixture between a white and a Native Amerindian), between 15 and 49 years of age, who self-destructs by hanging, strangulation, or suffocation firstly, or by using chemicals or pesticides, in his own residence. Problems related to mental health, employment, finances, or relationships also might have contributed to the high rates of suicide in this age group. Current mental health and/or substance abuse problems, relationship problems and losses, and recent socioeconomic crises were frequent precipitants for suicide. These factors have been documented also in other studies as important risk factors for suicide.

Alcohol and drug abuse in persons with and without affective mood disorders both were associated with suicidal behavior. However, this relation is quite complex; for instance, alcohol abuse might lead directly to depression or indirectly through the sense of decline and failure that is experienced by the majority of persons who are dependent on alcohol. Alcohol also might be a form of self-medication to alleviate depression.

A previous suicide attempt is an important predictor of subsequent fatal suicidal behavior. Disclosure of intent also is an important warning sign of suicidal intentions, although persons in close contact with potential victims of suicide are often unaware of the significance of these warnings or unsure of how to act on them.

Table 1 Distribution of deaths by suicide, method used, and year

Rank	ICD	Causes	2001	2002	2003	2004	2005	2006	2007	2008	Total	%
1	X70	Hanging, strangulation, or suffocation	202	204	240	369	447	429	517	436	2,844	44.35
2	X69	Other and unspecified chemicals and noxious substances ^a	113	112	170	147	132	168	227	237	1,306	20.37
3	X68	Pesticides	131	134	162	172	215	190	159	124	1,287	20.07
4	X74	Other fire weapons unspecified	89	95	72	70	84	52	57	65	584	9.11
5	X84	Unspecified methods	17	13	11	9	22	20	12	12	116	1.81
6	X65	Ethanol and related products	1	4	1	5	26	16	17	24	94	1.47
7	X78	With sharp objects	3	2	4	11	0	4	2	7	33	0.51
8	X64	Unspecified drugs	7	2	4	5	2	2	3	5	30	0.47
9	X67	Smoke and steam	3	0	7	0	3	3	1	1	18	0.28
10	X71	Drowning and submersion	5	4	0	0	0	4	1	1	15	0.23
11	X72	By gunshot with small weapon	5	1	0	2	1	2	0	4	15	0.23
12	X61	Antiseizure, hypnotic, antiparkinson, and psychotropic drugs	3	2	0	1	2	1	1	1	11	0.17
13	X66	Organic solvents and halogenated hydrocarbons	0	2	0	0	0	2	5	0	9	0.14
14	X79	With dull objects	0	0	0	2	4	0	1	2	9	0.14
15	X62	Narcotics and related drugs	0	0	1	2	1	2	0	1	7	0.11
16	X75	Explosives	2	2	0	0	0	2	0	1	7	0.11
17	X73	By gunshot with rifle or long weapon	1	1	0	0	2	0	0	3	7	0.11
18	X80	By jumping off a high place	0	0	0	0	2	0	3	1	6	0.09
19	X76	By smoke, fire, and flames	2	0	0	0	0	0	0	3	5	0.08
20	X60	NSAIDs	1	1	0	0	0	1	0	0	3	0.05
21	X83	Other methods	0	0	2	0	0	1	0	0	3	0.05
22	X81	By throwing or placing in front of moving object	0	0	1	1	0	0	0	0	2	0.03
23	X77	Water vapor, steam, and hot object	0	0	0	0	0	1	0	0	1	0.02
		<i>N</i>	585	579	675	796	943	900	1006	928	6,412	
		PMR	1.06	1.04	1.26	1.45	1.66	1.55	1.73	1.55	1.42	
		PR (pmp)	45.42	44.16	52.56	61.07	71.36	67.12	73.94	67.22	60.55	

INEC data elaborated by the authors

NSAIDs nonsteroidal anti-inflammatory drugs, PMR proportionate mortality ratio, PR prevalence rate, pmp per million population

^a X69 category includes: corrosive aromatics, acids, and caustic alkalis, glues and adhesives, metals including fumes and vapors, paints and dyes, plant foods and fertilizers, poisonous foodstuffs and poisonous plants, soaps, and detergents. ICD codes X60–X84: intentional self-harm

Discussion

This manuscript reflects the urgent need to understand this phenomenon and raise effective prevention policies, as well as begin a new stage in the proper management of mental health. This is the first formal study published on the epidemiology of suicide in Ecuador. Similar research has been carried out widely in English-speaking developed countries, so this study offers an opportunity to analyze possible cultural influences on the prevalence of these phenomena.

Strengths and limitations of this study

The findings provided in this report are subject to a few limitations. First, the availability, completeness, and timeliness of data are dependent on data sharing among institutions

involved in gathering information. This is challenging in some small provinces, where not enough resources exist to monitor these cases. Data from these remote regions are not expected to be as accurate as in large cities, so the results could be biased. The abstractors are limited to the data included in the reports that they receive. Also some reports do not reflect all information known about an event, particularly in the case of violence, where data are less readily available until after prosecutions are complete. In other cases, death definitions present challenges when a single death is classified in a different way or some variations in coding might occur depending on the abstractor's level of experience. Despite this, the national register is the only information available until now and it is the major source of information.

On the other hand, underrecording of suicides is a usual problem existing in most of the countries around the region, owing to the variety of ways these causes are coded and

Table 2 Distribution of deaths by unspecified event or undetermined intent (as a likely source of hidden suicides), method used, and year

Rank	ICD	Causes	2001	2002	2003	2004	2005	2006	2007	2008	Total	%
1	Y34	Event not specified, no specific intention	321	192	132	19	44	54	36	294	1,092	22.65
2	Y18	Pesticides	112	80	71	32	39	46	52	29	461	9.56
3	Y22	Gunshot with small weapon	119	131	63	13	0	0	0	1	327	6.78
4	Y19	Poisoning with other chemical substances	71	46	23	47	60	48	23	70	388	8.05
5	Y20	Hanging, strangulation, or suffocation	35	31	27	12	14	21	1	31	172	3.57
6	Y24	By other fire weapons unspecified	51	22	12	1	1	4	2	14	107	2.22
7	Y28	Sharp objects	32	8	5	0	1	5	0	9	60	1.24
8	Y21	Drowning and submersion	14	9	3	1	1	0	0	10	38	0.79
9	Y26	Smoke, fire, and flames	3	13	1	1	10	0	0	11	39	0.81
10	Y33	Aggressions with other methods	8	11	2	0	0	0	0	0	21	0.44
11	Y14	By other drugs, medicines, or biological substances	6	0	2	0	5	2	1	4	20	0.41
12	Y17	Smoke and steam	3	4	0	1	2	3	3	3	19	0.39
13	Y15	Poisoning by ethanol and related products	4	2	2	1	2	0	0	19	30	0.62
14	Y29	Dull objects	5	1	1	1	0	0	0	3	11	0.23
15	Y12	Poisoning by narcotics and related drugs	3	1	1	0	1	0	0	0	6	0.12
16	Y30	By boost from a high place	1	1	0	0	1	2	1	2	8	0.17
17	Y23	By gunshot with rifle or long weapon	3	0	1	0	1	0	0	0	5	0.10
18	Y11	Poisoning by antiseizure, hypnotic, antiparkinson, and psychotropic drugs	0	1	0	1	1	0	1	0	4	0.08
19	Y25	Explosives	0	2	0	0	1	0	0	2	5	0.10
20	Y31	By falling, staying, or running forward on moving object	2	0	0	0	0	0	0	1	3	0.06
21	Y10	Poisoning by NSAIDs	0	0	0	0	1	0	0	0	1	0.02
22	Y13	Poisoning by drugs that act on autonomous CNS	0	0	0	0	0	0	1	1	2	0.04
23	Y16	Poisoning by organic solvents and halogenated hydrocarbons	0	0	0	0	0	0	1	0	1	0.02
24	Y27	Water vapor, steam and hot object	0	0	0	0	0	1	0	0	1	0.02
		<i>N</i>	793	555	346	130	185	186	122	504	2,821	
		<i>PMR</i>	1.94	1.00	0.65	0.24	0.33	0.32	0.21	0.84	0.62	
		<i>PR (pmp)</i>	61.57	42.33	26.94	9.97	14.00	13.87	8.97	36.51	26.64	

INEC data elaborated by the authors. ICD codes Y10–Y34: unspecified event or undetermined intent

NSAIDs nonsteroidal anti-inflammatory drugs, *PMR* proportionate mortality ratio, *PR* prevalence rate, *pmp* per million population

analyzed, insufficient funding for information management, lack of trained personnel and coordinated data collection, and the existence of a non-centralized system for issuing reports. The morbidity and mortality statistics compiled by the services do not reflect the whole magnitude of this problem which could be higher. In addition, victims often do not seek support services at health institutions so that the events of undetermined attempts could be a source of hidden suicides.

Sociodemographic factors

The methods of suicide found in this study were similar to others reported in the world (Ajdacic-Gross et al. 2008). There are well-known differences between men and women. Violent and highly lethal methods such as firearm suicide and hanging are more frequent among men, whereas women often choose poisoning or drowning,

which are less violent and less lethal (Ajdacic-Gross et al. 2008). Hanging was the most frequent method when no other major method was available, followed by unknown poisons and pesticides; if these last two are added, the second most common method of suicide in Ecuador is poisoning in general.

The proportion of hangings typically decreases as either pesticide suicide or firearm suicide increases. Pesticide suicide has been recognized as a major public health problem in Ecuador as has been demonstrated in former studies (González-Andrade et al. 2010). A very common substance used to commit suicide is white phosphorus (WP), in a commercially produced firecracker called little devil. *Little devils* are explosive tablets that flame by violent friction, cost US \$0.25 each, and have a mortality rate that ranges between 20 and 90%, a fast, cheap, and secure way to kill oneself (González-Andrade et al. 2002).

Table 3 Distributions of deaths by category, gender, and main age groups

Suicides Age/gender	2001		2002		2003		2004		2005		2006		2007		2008		Overall		Total		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		%	%
5–15	15	17	16	23	11	20	30	30	34	26	29	28	45	23	24	22	204	204	51.91	48.09	393
15–50	314	151	349	148	343	187	418	418	509	218	444	240	540	226	506	199	3,373	3,373	68.50	31.50	4,924
50–65	39	14	55	7	64	7	67	14	89	11	79	19	96	15	81	26	570	570	83.46	16.54	683
≥ 65	31	4	28	3	35	8	4	11	51	5	50	11	51	10	63	8	313	313	83.91	16.09	373
Total	399	186	448	131	453	222	559	237	683	260	602	298	732	274	674	254	4,550	4,550	70.96	29.04	6,412
PR (pmp)	30.98	14.44	34.17	9.99	35.27	17.29	42.89	18.18	51.68	19.67	44.90	22.23	53.80	20.14	48.82	18.40	42.49	42.49	70.96	29.04	60.55
Undetermined intent or unspecified event																					
≤ 1	2	3	1	3	2	0	0	0	1	2	1	2	2	1	12	6	21	21	52.50	47.50	40
1–5	10	10	12	4	7	2	2	2	6	6	5	6	4	3	10	4	56	56	60.87	39.13	92
5–15	24	18	23	13	11	11	4	4	12	5	8	5	3	8	9	8	94	94	56.97	43.03	165
15–50	463	93	299	75	181	49	61	33	60	39	73	39	47	20	245	57	1,450	1,450	78.25	21.75	1,853
50–65	66	15	61	5	43	3	13	1	21	3	21	3	15	2	62	12	302	302	87.28	12.72	346
≥ 65	69	20	44	15	33	4	11	1	17	13	10	13	14	3	55	24	253	253	73.12	26.88	346
Total	634	159	440	115	277	69	91	39	117	68	118	68	85	37	393	111	2,155	2,155	76.39	23.61	2,821
PR (pmp)	49.23	12.35	33.56	8.77	21.57	5.37	6.98	2.99	8.85	5.15	8.80	5.07	6.25	2.72	28.47	8.04	20.35	20.35	76.39	23.61	26.64

INEC data elaborated by the authors. Age in years

PR prevalence rate, pmp per million population

Table 4 Comparison of suicide prevalence rates by gender and by country

Country (WHO data)	Year ^a	Male	Female	Total
Belarus	2003	633	103	351
Lithuania	2008	559	91	307
Kazakhstan	2007	462	90	269
Uruguay	2004	260	63	158
Canada	2004	173	54	113
USA	2005	177	45	110
Chile	2005	174	34	103
Costa Rica	2006	132	25	80
Argentina	2005	127	34	79
Spain	2005	120	38	78
Ecuador (WHO)	2005	104	40	72
Ecuador (our data)	2005	51	19	71
Ecuador (our data)	2008 ^b	42	18	61
Colombia	2005	78	21	49
Brazil	2005	73	19	46
Paraguay	2004	55	27	41
Mexico	2006	68	13	40
Venezuela	2005	61	14	38
Guatemala	2006	36	11	23
Peru	2000	11	6	9

WHO country reports and charts (World Health Organization 2009a, b); elaborated by the authors. Age in years

PR prevalence rate, *pmp* per million population

^a Last year reported

^b Average of period 2001–2008

Other common known substances are organophosphates and carbamates that cause death by inhibition of acetylcholinesterase and are frequent as pesticides in banana and flower plantations in Ecuador.

Firearm suicide was not frequent in our country because the private use of firearms is forbidden. However, in recent years a very important increase in the illegal circulation of firearms has increased the levels of violence, and it is thought that this will increase the homicide and suicide rate for firearms.

The most frequent age to commit suicide ranged from 15 to 50 years; there was no specific risk group affected in our study mainly due to a lack of specific information on this issue. These findings do not coincide with other studies that have shown a notorious increase of suicide in adolescents in Latin America, or in the case of some developed countries, in elderly people. Further studies are necessary to clarify this aspect. On the other hand, men committed suicide more frequently than women, a circumstance that does not differ from other regional analyses.

The circumstances are quite different regarding unspecified events or undetermined intent. In the majority of cases

the method used was unknown, which made it difficult to establish a pattern. The second most frequent method in this group was the use of pesticides, followed by gunshot with a small weapon. These findings indicate that there is a confounding factor in the etiology of the problem between suicides and homicides.

However, it is clear that more studies are needed on the cause of the death at a crime scene. It could be inferred that using pesticides or other related substances, hanging and the use of a firearm are similar methods seen in suicide cases, and therefore they could be hidden cases of suicides. On the other hand, there were a variety of methods used to commit suicide, some of them very creative but not very effective. A great quantity of them do not seek to kill themselves in a very precise way. It is possible that a few cases were only suicide attempts that failed unfortunately.

Psychiatric issues

Suicidal behavior exists along a continuum from thinking about ending one's life, to developing a plan, to nonfatal suicidal behavior, to ending one's life. Suicidal behaviors almost always occur in people with depression, bipolar disorder, schizophrenia, and alcohol dependence. According to the Ministry of Public Health (MPH 2010), every year there are 1,750 suicide attempts in Ecuador (PR=133.7 ppm), and the ratio of suicide attempt to suicide is 19:1.

People who attempt suicide are often trying to get away from a life situation that seems impossible to deal with. Many who make a suicide attempt are seeking relief from bad thoughts or feelings, feeling ashamed, guilty, or like a burden to others, feeling like a victim or feelings of rejection, loss, or loneliness. In our study, this standard pattern could not be recognizable because all our data were retrieved from hospitalization registers.

Analyzing the same data, official records also show an increase of the rate of suicides across time in the last 40 years, from a PR of 23 pmp in 1971 to 67 pmp in 2008, accounting for a total increase of 190%. Similar data were found in this study: a constant, yearly, and progressive increase in the suicide PR (MPH 2010).

Some authors (Pritchard and Hean 2008) believe that the deaths by undetermined intent could be an important source of hidden suicides, particularly in countries where Catholicism is the primary religion. It is known that according to the Catholic religion, a person who commits suicide cannot attain divine status after death. So many families at the time of filling out the paperwork ask that suicide not be mentioned as the cause of death and prefer to use the term accident.

On the other hand, suicide involves opening a criminal investigation by prosecutors seeking to establish the motive and the specific cause of death. Similarly, many traditional

families are opposed to legal intervention in these cases and hide behind the word accident in cases of a possible suicide. It is worth mentioning that assisted suicide is not allowed in Ecuador. This religious influence has forced many families to keep this issue within their families without seeking the support of the specialized mental health programs in this field.

This is an important aspect that deserves further and complex studies. Regarding this issue, in the category of unspecified events the most common method of death was also the use of pesticides, and it is still unknown whether these deaths were related to unintentional poisonings or deliberate suicides.

Regional comparisons

As the reader can see in Table 4, the suicide PR was similar to the neighboring countries in South America, with the exception of Uruguay and Chile which show a higher PR. If the PR is divided into four main groups, Guatemala and Peru have the lowest PR (less than 30 pmp), the next group (between 30 and 100 pmp) comprises Ecuador and Central and South America, the third group (between 100 and 150 pmp) covers North America, and finally the fourth group (over 150 pmp) involves the Eastern European region. It is not possible to determine which factors affected these regional differences, especially in Uruguay, but definitely the world economic crisis in recent years is an important factor to consider.

Prevention opportunities

Many prevention opportunities are available to reduce suicide deaths. Risk and protective factors for interpersonal and self-directed violence operate at multiple levels of social influence. Prevention programs can benefit from considering both the best way to address individual-level factors and the factors within families, peer groups, schools, and communities that contribute to suicidal behavior. In general, prevention approaches that address multiple domains of influence on behavior are more likely to have a preventive impact than those that focus on a single risk factor. Programs designed to enhance social problem-solving and coping skills to deal with stressful life events, health and financial problems, or other problems that occur within interpersonal relationships can potentially reduce the suicide rate.

In addition to demonstrating the need to address situational stressors, the findings in this report underscore the importance of changing cultural and social norms and addressing the social and economic conditions within communities. Mental health problems also were prevalent among suicide decedents who did not receive treatment

previously. Again, these results highlight the importance of knowing the signs and symptoms of suicidal behavior, reaching out to those with problems, reducing the stigma of mental illness, and increasing the accessibility of treatment which can contribute to preventing suicide.

Conclusion

Suicide in Ecuador has increased in a constant and progressive way, even though there is major underreporting of these cases. The main method to commit suicide was hanging followed by pesticide poisoning. Suicide prevalence rates were similar to neighboring countries in South America, with the exception of Uruguay. Unspecified events or undetermined intents could be a source of hidden suicides, a fact that needs further analysis.

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