

From pesticides to medicinal drugs: time series analyses of methods of self-harm in Sri Lanka

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Objective To explore if recent changes in methods of self-harm in Sri Lanka could explain the decline in the incidence of suicide.

Methods Time series analyses of suicide rates and hospitalization due to different types of poisoning were carried out.

Findings Between 1996 and 2008 the annual incidence of hospital admission resulting from poisoning by medicinal or biological substances increased exponentially, from 48.2 to 115.4 admissions per 100 000 population. Over the same period, annual admissions resulting from poisoning with pesticides decreased from 105.1 to 88.9 per 100 000. The annual incidence of suicide decreased exponentially, from a peak of 47.0 per 100 000 in 1995 to 19.6 per 100 000 in 2009. Poisoning accounted for 37.4 suicides per 100 000 population in 1995 but only 11.2 suicides per 100 000 in 2009. The case fatality rate for pesticide poisoning decreased linearly, from 11.0 deaths per 100 cases admitted to hospital in 1997 to 5.1 per 100 in 2008.

Conclusion Since the mid 1990s, a trend away from the misuse of pesticides (despite no reduction in pesticide availability) and towards increased use of medicinal and other substances has been seen in Sri Lanka among those seeking self-harm. These trends and a reduction in mortality among those suffering pesticide poisoning have resulted in an overall reduction in the national incidence of accomplished suicide.

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Introduction

Although adoption of new modes of self-harm by a population does not occur often, when it does happen it can have an impact on the incidence of suicide in that population (in this article we use the word suicide only to mean death by self-harm, excluding failed attempts at fatal self-harm). Many such changes result from reduced access to a means of suicide.¹ In the United Kingdom of Great Britain and Northern Ireland, for example, the removal of carbon monoxide from the gas supply was associated with a reduction in the overall suicide rate.² Introduction of catalytic converters, which reduced the amount of carbon monoxide emitted by car exhausts, was also associated with a fall in the overall incidence of suicide.³

Sri Lanka is a developing country that once recorded very high suicide rates. During the period from 1985 to 1989, for example, the national suicide rate for males was the second highest in the world.⁴ Before 1960, hanging was the commonest method of suicide in Sri Lanka. In the 1960s, 75% of all suicides by poisoning were caused by ingestion of acetic acid, which was used in rubber processing.⁵ The national incidence of suicide rose rapidly between 1970 and 1995 and peaked at 47.0 suicides per 100 000 population in 1995.⁶ This increase, which was mainly attributable to pesticide-related deaths, coincided with the increasing pesticide imports that followed the adoption of open economic policies in 1977.

Since 1995 the incidence of suicide has gradually declined in Sri Lanka,⁷ although this encouraging trend has gone almost unnoticed. Globally, most suicides in low- and middle-income countries are caused by pesticide poisoning.⁸ It is estimated that 300 000 people die annually in Asia from pesticide ingestion.⁹ The general means of self-poisoning is very different in high-income countries, where analgesics, tranquillizers and other medicinal drugs are commonly used in overdose.¹⁰ Compared with pesticides, many such drugs are

relatively non-toxic.⁸ The much higher case fatality rate (CFR) from pesticide poisoning (compared with that of medicinal drug overdose) is a major contributor to deaths from suicide in developing countries.^{11,12}

In the absence of any restriction on the availability of the methods previously used, method substitution in self-harm (i.e. the abandonment of one common method of self-harm and its substitution with another method) has not been widely reported. Although, as in many developing countries, pesticide poisoning is a major cause of death in Sri Lanka,^{8,13} medicinal drugs were found to be the commonest substances used by the self-poisoning patients investigated at a tertiary care hospital in the city of Colombo in 2007.¹⁴ We set out to investigate recent changes in the methods of self-harm in Sri Lanka – particularly the changes in the methods employed by people attempting suicide – and to explore if such changes could explain the substantial decline in suicide rates.

Methods

Data were collected for the period from 1995 to 2009. Data from the records of the Sri Lanka police force were used to calculate annual incidence rates of suicide. As a coroner's inquest is conducted into every unnatural death in Sri Lanka, the police records on suicides were viewed as comprehensive. The data collected were for suicide by any method, suicide by poisoning and suicide by any method other than poisoning. Until the year 2002, when a new coding category was introduced, the cause of large numbers of unnatural deaths was simply classified as "other means". Since the results of previous studies indicate that most such deaths by "other means" were the result of poisoning,^{6,15} they were all attributed to poisoning in the present analysis. Annual health statistics from the national ministry of health were used as the source of data

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on poisoning-related hospital admissions. Estimated mid-year populations for Sri Lanka were used to convert the collected data to annual incidence rates, which throughout this paper are given as the numbers of suicides or admissions for poisonings per 100 000 population.

The records of the Ministry of Health include data on the substances used in each case of poisoning. Since 1997, the Ministry of Health has classified each such poisoning according to the 10th revision of the International Classification of Diseases (ICD-10).¹⁶ For the present study, self-poisonings were separated into three categories: the toxic effects of pesticides (T60.0, T60.1 and T60.9); poisoning by drugs, medicaments and biological substances (T36–T50); and the toxic effects of other, “chiefly non-medicinal” substances, including solvents, halogen derivatives, corrosives, metals, gases and food (T51–T59, T61, T62 and T63.1–T65).

Statistical analysis

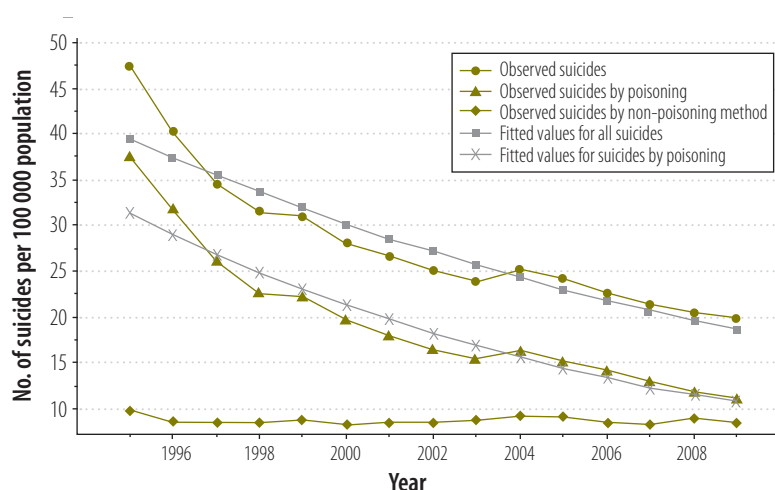
Trends in the incidence rates of suicide and self-poisonings were investigated using univariate time series analysis, with the recorded data fitted to linear, quadratic and exponential growth models using Minitab statistical software version 14.0 (Minitab Ltd, Coventry, England). Model adequacy was tested using the mean absolute percentage error (MAPE), a measure of how much a dependent series varies from its model-predicted level. As MAPE is independent of the units used, it can validly be used to compare series with different units.

Results

Trends in suicide

The annual incidence rates of suicide between 1995 and 2009 are shown in Fig. 1, the plotted lines indicating the overall trend and trends for suicides by poisoning or other methods. From a peak of 47.0 suicides per 100 000 in 1995, the overall rate had fallen by more than half, to 19.6 suicides per 100 000 by 2009 (representing an absolute reduction of 27.4 suicides per 100 000). Using a time series analysis, an exponential model was fitted to the annual incidence rates of suicide (by any method) between 1995 and 2009, the trend being described as $Y_t = 41.61 \times 0.947^t$, where Y_t is annual incidence (in suicides per

Fig. 1. Trends in the annual incidence of completed suicides, Sri Lanka, 1995–2009



100 000 population) and t is the time elapsed (in years). There was a clear, significant decrease in the suicide rate, of 5.3% per year.

The substances used in the poisoning-related suicides recorded by the national police force included pesticides, acids, plant poisons and medicinal drugs. The non-poisoning methods of suicide that were recorded included hanging, drowning, use of firearms, use of explosives, self-immolation, jumping from heights and jumping in front of moving vehicles.

A time trend analysis of the suicides by poisoning revealed another exponential decline in incidence, with $Y_t = 33.72 \times 0.925^t$. The annual incidence of such suicides was 37.4 per 100 000 in 1995 but had declined to 11.2 per 100 000 in 2009 (an absolute reduction of 26.2 per 100 000).

Over the study period, no systematic trend was apparent in the annual incidence of suicide by non-poisoning methods, which only ranged between 8.2 and 9.7 cases per 100 000. Thus it appears that the decline in the overall incidence of suicide in Sri Lanka since 1995 is mainly the result of a decline in deaths caused by self-poisoning, with the incidence of suicides by other methods remaining more or less static over the study period.

The annual incidence rates of suicides by pesticide poisoning, which declined from 10.1 suicides per 100 000 in 1996 to 4.5 per 100 000 in 2009, were found to fit a quadratic trend ($Y_t = 10.35 + 0.032t - 0.033t^2$). The annual incidences of suicides from the toxic effects of

other, chiefly non-medicinal substances also declined over the study period but this trend was linear ($Y_t = 2.71 - 0.13t$). The corresponding incidences of fatal self-poisoning using drugs, medicaments and biological substances did not show a clear trend over time but ranged between 0.26 and 1.92 cases per 100 000.

Trends in poisoning

The trends in hospital admissions due to poisoning, as recorded by the Ministry of Health, are shown in Fig. 2. Over the study period, the annual incidence of hospital admission for any type of poisoning showed exponential growth ($Y_t = 210.28 \times 1.02^t$), having increased from 204.8 admissions per 100 000 population in 1995 to a peak of 321.2 per 100 000 in 2007. The incidence of hospitalization for poisoning with medicinal and biological substances also showed exponential growth ($Y_t = 30.43 \times 1.11^t$), from 48.17 admissions per 100 000 in 1996 to 115.39 per 100 000 in 2008. Similarly, hospital admissions due to the toxic effects of other, chiefly non-medicinal substances also showed an exponential increase, from 72.11 per 100 000 population in 1996 to 110.68 per 100 000 in 2008 ($Y_t = 74.55 \times 1.022^t$). In contrast, the annual incidence of hospitalization for pesticide poisoning over the same period decreased in a linear fashion ($Y_t = 106.58 - 1.32t$), from 105.14 admissions per 100 000 in 1996 to 88.85 per 100 000 in 2008.

Taken together – if we assume that, over the study period, cases of self-harm represented a large and fairly stable proportion of the people hospitalized for

Fig. 2. Annual incidences of hospital admissions for poisoning with various substances, Sri Lanka, 1995–2008

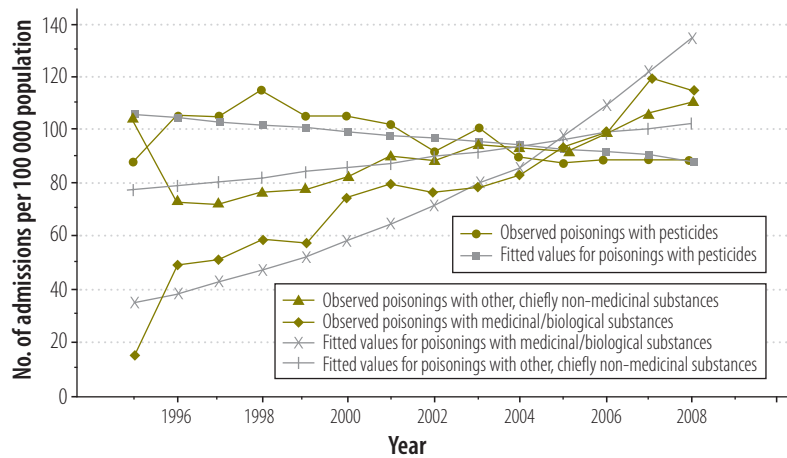
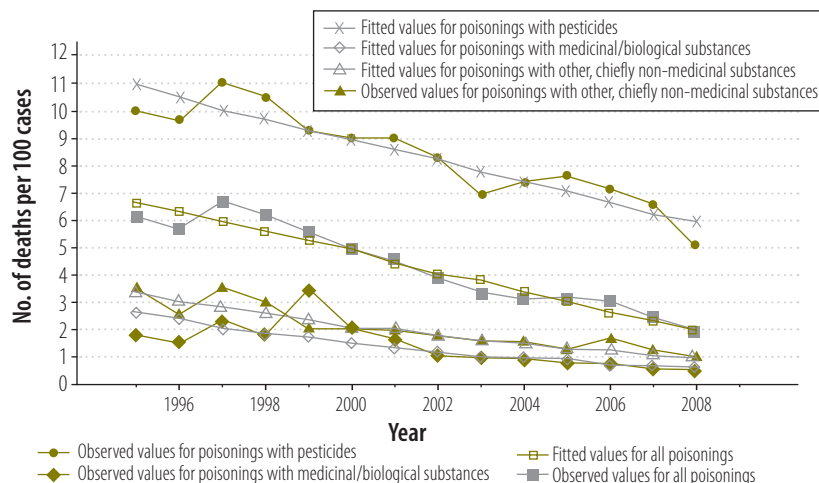


Fig. 3. Annual case fatality rates among those hospitalized for poisoning with pesticides, medicines/biological substances or other, chiefly non-medical substances, Sri Lanka, 1995–2008



poisoning – these data suggest that the exponential increase seen in Sri Lanka in the incidence of self-harm by poisoning since the mid 1990s is mainly attributable to increased use for such poisoning of medicinal and biological substances and substances classified as “chiefly non-medical”, while self-harm due to pesticide poisoning has decreased.

Case fatality rates

Case fatality rates, expressed throughout this paper as deaths per 100 admitted cases, were calculated for each study year and each of the three main categories of substances used in self-poisonings (Fig. 3). Over the study period, the CFR for all types of poisoning showed

a decreasing linear trend, with a drop from 6.13 deaths per 100 cases of poisoning in 1995 to 2.01 deaths per 100 in 2008. This trend could be described as $Y_t = 6.97 - 0.35t$, where here Y_t is the CFR (in deaths per 100 cases) and t is, again, the number of years elapsed. The CFR for pesticide poisoning also showed a decreasing linear trend ($Y_t = 11.18 - 0.37t$); it peaked at 11.0 deaths per 100 admitted cases in 1997 and then gradually declined to 5.07 deaths per 100 in 2008. The CFR for poisoning by medicinal drugs and biological substances showed an exponential decline ($Y_t = 2.95 \times 0.89^t$), from 1.81 deaths per 100 cases in 1995 to just 0.51 deaths per 100 in 2008. Similarly,

the corresponding CFR for poisoning by other, chiefly non-medical substances also showed an exponential decline over the study period ($Y_t = 3.6 \times 0.91^t$).

Discussion

Main findings

Sri Lanka is one of the few countries in the developing world to report a steady decline in suicide rates in the recent past. Our findings indicate that the exponential decrease seen in suicide rates in Sri Lanka since the mid 1990s is largely attributable to a decline in fatal self-poisonings, the incidence of suicides by non-poisoning methods having remained almost the same. Over the same period, the annual number of people hospitalized after pesticide poisoning has also declined, which suggests that the ingestion of pesticide as a method of self-harm has become rarer. The probability that a person admitted to hospital because of pesticide ingestion will survive the toxic effects has also increased. Nonetheless, self-poisoning has become more common overall, despite the reduction in pesticide ingestion, because medicinal drug overdose and poisoning by other substances classified as “chiefly non-medical” have become ever more frequently used for self-harm.

Changing patterns of self-harm and suicide

Several explanations for the decline in pesticide-related suicides must be considered. In 1990, the Food and Agriculture Organization recommended the safe storage of all pesticides and a ban on the use of highly toxic pesticides.¹⁷ The data collected in two previous studies indicate that in Sri Lanka the banning of pesticides in the Class I toxicity category of the World Health Organization (WHO) (in 1995) and of endosulfan (in 1998) could explain the decline in the CFR for pesticide poisonings and the decline in the incidence of suicide.^{6,18} However, since the CFR for non-pesticide poisonings has also been declining in Sri Lanka, it can be assumed that a general improvement in the medical management of poisoning has also contributed to the decline in the pesticide-related CFR. Since the 1990s, efforts have been made to develop and disseminate guidelines for the management of poisoning in Sri Lanka and to improve the training of clinicians in

such management. Other factors that have certainly contributed to improving the survival of poisoning cases in Sri Lanka are the increased availability of antidotes in hospitals, improvements in the management of intensive care units and improvements in the road network and transport facilities (enabling quicker access to hospital).

The impact that the changing pattern of self-harm has had on the overall suicide rate in Sri Lanka has not been reported previously, perhaps because this has only become apparent in the past 8 years. Since 2003 there has been a decline in hospital admissions because of pesticide ingestion and an almost parallel increase in admissions because of medicinal drug overdose. Since 2005, the incidence of hospital admissions for drug overdose, like that for poisoning with other, chiefly non-medicinal substances, has been higher than for pesticide ingestion. Of the total admissions due to poisoning in 2008, for example, 36.64% were due to ingestion of “medicaments and biological substances”, 35.15% to ingestion of “other, chiefly non-medicinal substances” and only 28.21% to pesticide ingestion. Thus, we see a gradual change in methods of self-harm in Sri Lanka with the increasing use of medicinal drugs, a pattern found primarily in developed societies.

How and why this change occurred needs to be explored. Social acceptability and availability have been cited as the main factors affecting the choice of method in self-harm.¹³ Easy availability may be particularly important in unplanned, impulsive attempts; of the 82 patients investigated in a recent study, all of whom had attempted suicide, almost 50% reported an interval of no more than 10 minutes between their first thought of suicide and their actual attempt.¹⁹ In Sri Lanka, no apparent restriction has been imposed on the general availability of pesticides over the period when suicide incidence has been declining. Between 1995 and 2000, pesticide consumption in Sri Lanka remained almost the same.^{6,19} The import of pesticide formulations has, in fact, increased, with approximately 3460 and 6210 tonnes imported in 2001 and 2005, respectively.²⁰ Therefore, in Sri Lanka the change in the predominant substances used for self-poisoning, from those with high lethality (pesticides) to others with, in general, relatively low lethality, has occurred even in the absence of

any apparent restriction on the general availability of pesticides.

In the past, most suicides in Sri Lanka were thought to result from impulsive attempts in people with low suicidal intent who, often unknowingly, used highly lethal methods.⁸ It is possible that, after widespread use of pesticide self-poisoning (as a suicide or parasuicide method) over several decades, the fact that pesticides are highly lethal is now general knowledge and therefore people with low suicidal intent choose other substances, such as medicinal drugs, for poisoning themselves. It is perhaps noteworthy that reduction in the use of pesticides for self-harm has not led to a corresponding increase in other, generally lethal methods, such as hanging.

Use of paracetamol and other medicinal drugs in overdose cases has mainly been reported from developed nations, such as Australia, European countries and the United States of America.²¹ In most developing countries, overdoses with such medicines are mainly reported in cities.²² Since the 1990s, however, the Hong Kong Special Administrative Region (SAR) in China and several Asian countries, such as Malaysia, Singapore and Viet Nam, have reported the increasing use of medicinal drugs in self-poisoning and this is now the commonest mode of self-harm in urban areas of Malaysia and Viet Nam.^{23–30} There are, however, no corresponding reports of medicinal drugs replacing pesticides as the preferred method of self-harm. The rapid and extensive spread of a novel method of suicide in China (including the Hong Kong Special Administrative Region SAR and Taiwan, China) – the burning of charcoal to produce fatal amounts of carbon monoxide – has been attributed to extensive media coverage.³¹ On the other hand, in Sri Lanka the use of overdoses of paracetamol and other pharmaceutical agents for self-harm has not received much media coverage and the influence of the media on method substitution is therefore probably minimal.

The reason for the change in the main mode of self-harm in Sri Lanka, from pesticides to other substances, is still unclear. As discussed above, common reasons for a change in method of self-harm, such as restriction of method availability or extensive media attention, are unlikely to have played a major role. Qualitative research meth-

ods could be used to understand this change and future research could also look at geographical variation within the country in the choice of methods used, which might also help answer the above question. It would also be interesting to see if the incidence and methods of suicide have changed in other developing countries as they have in Sri Lanka. Identification of the factors that have contributed to the reduced use of pesticides as a method of self-harm in Sri Lanka would be beneficial in the development of suicide prevention programmes.

The findings of this study have several public health implications. Because of the reduction in the national incidence of suicide, the health authorities and policy-makers of Sri Lanka may slacken their efforts to implement interventions to prevent self-harm. Our analyses indicate that, although the annual numbers of deaths from poisoning have fallen since the mid 1990s, the incidence of self-harm has increased alarmingly. There is a need to identify and deal with the factors that lead to self-harm. The number of people who die from pesticide poisoning is still substantial, and efforts to prevent such poisoning and further reduce the related CFR need to continue. In addition, the health personnel of Sri Lanka need training in the effective management of medicinal drug overdose.

Limitations of this study

Questionable data accuracy is the main limitation of this study. Suicides are under-reported in many developing countries. The quality of data from Sri Lanka is classified as level 3 (i.e. only poor to fair) by the WHO.³² Ministry of Health data do not allow the relatively small numbers of admissions resulting from criminal poisoning or unintentional self-poisoning to be distinguished from admissions for intentional self-poisoning and these data include admissions to only government hospitals. Although the number of admissions to private hospitals for self-poisoning is likely to be small, these numbers were not included in the present analysis. Data for the north and the east of Sri Lanka are likely to be incomplete because of armed conflict in these areas during the study period. Many deaths from pesticides are misclassified as accidental or as deaths of undetermined cause.⁵ Despite these limitations, the suicide trends are clear.

This study has looked only at changes in self-harm and suicide and the methods used; it has not looked at factors that

may influence such behaviour, such as alcohol use or economic status. ■

Competing interests: None declared.

ملخص

من المبيدات الحشرية إلى الأدوية الطبية: تحليل التسلسل الزمني لطرق الإيذاء الذاتي في سيرلانكا
التسمم مسؤولاً عن 37.4 انتحاراً لكل 100000 من السكان في عام 1995، ولكنه تراجع إلى 11.2 انتحاراً لكل 100000 في عام 2009. وتراجع معدل إماتة الحالات بالتسمم تراجعاً خطياً من 11 وفاة لكل 100 حالة يتم علاجها في المستشفى في عام 1997 إلى 5.1 وفاة لكل 100 حالة في عام 2008. الاستنتاج منذ أواسط تسعينيات القرن الماضي، ظهر اتجاه نحو الابتعاد عن إساءة استخدام المبيدات (مع أن توفر المبيدات لم يتراجع)، وظهر اتجاه نحو زيادة استعمال الأدوية الطبية والمواد الأخرى في سيرلانكا بين من يقدمون على إيذاء أنفسهم. وقد أدى هذا الاتجاه في انخفاض الوفيات الناجمة عن التسمم بالمبيدات إلى انخفاض إجمالي المعدل الوطني لوقوع حالات الانتحار التي انتهت بالموت.

الغرض استكشاف إذا كانت التغيرات التي طرأت على طرق الإيذاء الذاتي يمكنها تفسير تراجع معدل وقوع الانتحار في سيرلانكا. الطريقة أجري الباحثون تحليلاً تسلسلياً زمنياً لمعدلات وقوع الانتحار والمعالجة في المستشفيات نتيجة لمختلف أنواع التسمم. النتائج بين عامي 1996 و 2008، ازداد المعدل السنوي للمعالجة في المستشفيات بسبب التسمم بالأدوية الطبية والمواد البيولوجية زيادة أسية من 48.2 إلى 115.4 معالجة في المستشفى لكل 100000 من السكان. وفي نفس الفترة، تناقص معدل دخول المستشفيات السنوي نتيجة للتسمم بالمبيدات من 105.1 إلى 88.9 لكل 100000 من السكان. وتناقص معدل وقوع الانتحار السنوي تناقصاً أسياً من معدل بلغ ارتفاعه 47.0 لكل 100000 في عام 1995 إلى 19.6 لكل 100000 في عام 2009. وكان

摘要

从农药到药品：斯里兰卡人自我伤害方法的时间序列分析

目的 旨在探讨斯里兰卡近来自我伤害方法的变化能否解释自杀发生率的下降。

方法 对各种以中毒方式实施的自杀和住院治疗进行时间序列分析。

结果 1996-2008年间，因药物或生物物质中毒事件入院的年发生率迅速增长，从每十万人中48.2例增长到115.4例。同一时期，因农药中毒而引起的年入院病例从每十万人中105.1例下降至88.9例。而年自杀发生率也出现骤降，从1995年每十万人中47.0例的峰值水平下降到2009年每十万人中19.6例。1995年，每十万人中有37.4例自

杀通过中毒实施，而2009年每十万人中仅11.2例自杀通过此方式发生。农药中毒的病死率直线下降，从1997年每一百入院病例中11.0例下降到2008年每一百入院病例中5.1例。

结论 自二十世纪九十年代中期以来，斯里兰卡寻求自我伤害的人中，滥用农药的趋势减退（尽管农药的可用性并未减少），而使用药物和其他物质的趋势则增强。这些趋势以及农药中毒人群死亡率减少的结果使全国自杀发生率整体下降。

Résumé

Des pesticides aux médicaments : analyses de séries chronologiques des méthodes d'automutilation au Sri Lanka

Objectif Étudier si les récentes modifications dans les méthodes d'automutilation au Sri Lanka pouvaient expliquer la diminution de l'incidence du suicide.

Méthodes Des analyses de séries chronologiques des taux de suicide et de l'hospitalisation due à différents types d'empoisonnement ont été réalisées.

Résultats Entre 1996 et 2008, l'incidence annuelle de l'admission en hôpital suite à un empoisonnement par des substances médicinales ou biologiques a augmenté de manière exponentielle, passant de 48,2 à 115,4 admissions pour 100 000 habitants. Sur la même période, les admissions annuelles résultant d'un empoisonnement aux pesticides ont diminué, passant de 105,1 à 88,9 pour 100 000 habitants. L'incidence annuelle du suicide a diminué de manière exponentielle, passant d'un pic de 47 pour 100 000 habitants en 1995 à 19,6 pour

100 000 habitants en 2009. L'empoisonnement représentait 37,4 suicides pour 100 000 habitants en 1995, mais seulement 11,2 suicides pour 100 000 habitants en 2009. Le taux de létalité par empoisonnement aux pesticides a diminué de façon linéaire, passant de 11 décès pour 100 cas admis en hôpital en 1997 à 5,1 pour 100 cas en 2008.

Conclusion Depuis le milieu des années 1990, une tendance se dessine au Sri Lanka chez les personnes cherchant à s'automutiler, loin de l'abus des pesticides (malgré l'absence de réduction de la disponibilité des pesticides) et vers une augmentation de l'utilisation des substances médicinales et autres. Cette tendance, ainsi qu'une diminution de la mortalité chez les personnes présentant un empoisonnement aux pesticides, ont entraîné une réduction globale de l'incidence nationale du suicide.

Резюме

От пестицидов к лекарственным средствам: исследование методов самоповреждения в Шри-Ланке с помощью анализа временных рядов

Цель Исследовать, можно ли объяснить снижение распространенности самоубийств в Шри-Ланке недавними изменениями методов самоповреждения.

Методы Был проведен анализ временных рядов по показателям количества самоубийств и случаев госпитализации по поводу различных видов отравления.

Результаты За период с 1996 по 2008 год ежегодная встречаемость случаев поступления в больницу по поводу отравления лекарственными средствами или биологическими веществами экспоненциально возросла, с 48,2 до 115,4 случая на 100 тыс. человек населения. За тот же период ежегодное количество случаев поступления в больницу по поводу отравления пестицидами снизилось со 105,1 до 88,9 случая на 100 тыс. человек. Произошло экспоненциальное снижение ежегодной встречаемости самоубийств, с пика в 47,0 случаев на

100 тыс. человек в 1995 году до 19,6 случая на 100 тыс. человек в 2009 году. На долю отравлений в 1995 году приходилось 37,4 самоубийства на 100 тыс. человек населения, а в 2009 году – только 11,2 самоубийств. Произошло линейное снижение коэффициента смертности от отравления пестицидами с 11,0 смертных случаев на 100 пациентов, поступивших в больницу, в 1997 году до 5,1 смертного случая на 100 пациентов в 2008 году.

Вывод С середины 1990-х годов в Шри-Ланке среди лиц, стремящихся к самоповреждению, наблюдается тенденция к снижению злоупотребления пестицидами (несмотря на то, что доступность пестицидов не уменьшилась) и к росту использования лекарственных препаратов и других веществ. Эти тенденции и снижение смертности среди пострадавших от отравления пестицидами привели к общему уменьшению встречаемости случаев совершения акта самоубийства.

Resumen

De los pesticidas a los fármacos: análisis de series temporales de los métodos de autolesión en Sri Lanka

Objetivo Examinar si los cambios recientes en los métodos de autolesión en Sri Lanka podrían explicar el descenso de la incidencia de suicidio en dicho país.

Métodos Se llevaron a cabo análisis de series temporales de las tasas de suicidio y hospitalización por diferentes tipos de intoxicación.

Resultados Entre 1996 y 2008, la incidencia anual de admisión hospitalaria provocada por intoxicación por sustancias farmacológicas o biológicas incrementó exponencialmente de 48,2 a 115,4 ingresos por cada 100 000 habitantes. Durante el mismo periodo, los ingresos anuales provocados por intoxicación con pesticidas se redujeron de 105,1 a 88,9 casos por cada 100 000 habitantes. La incidencia anual de suicidio se redujo exponencialmente, de un pico de 47,0 casos por cada 100 000 habitantes en 1995 a 19,6 por 100 000 habitantes en 2009. Las intoxicaciones fueron las responsables de 37,4 suicidios por cada

100 000 habitantes en 1995, pero en el año 2009 solo representaron 11,2 suicidios por cada 100 000 habitantes. La tasa de letalidad de las intoxicaciones por pesticidas presentó una reducción lineal, de 11,0 muertes por cada 100 casos de ingreso en el hospital en 1997 a 5,1 por cada 100 casos en el año 2008.

Conclusión Desde mediados de la década de 1990 se ha experimentado una tendencia entre aquellas personas que pretenden autolesionarse en Sri Lanka que se aleja del uso inadecuado de los pesticidas (a pesar de que no se ha producido una reducción en la disponibilidad de los mismos) y que se acerca a un mayor uso de sustancias farmacológicas y de otro tipo. Estas tendencias unidas a una reducción de la mortalidad entre aquellos que sufrieron una intoxicación por pesticidas han dado como resultado un descenso global de la incidencia nacional de suicidio consumado.

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