The Cost of Hospital Care in the Year Before and After Parasuicide

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This study, based in Ireland in the Limerick centre of the WHO/EURO Multicentre Study of Parasuicide, tests the hypothesis that the uptake of hospital services increases significantly following an act of parasuicide. To investigate this, the costs of hospital attendance in the year before and in the year after an act of parasuicide are measured and compared. The sample is comprised of the first 100 individuals who attended an acute general hospital following an act of parasuicide after July 1, 1995. Using a computerized patient record system, every hospital attendance is identified, for each individual, in the 12 months before and after the parasuicide act. This includes every visit to the Emergency Room as well as both general and psychiatric inpatient admissions and outpatient attendances. There was a 50% increase in the uptake of hospital services—32% of the sample attended hospital in the year before compared with 48% in the year after. The total yearly costs for the 100 patients almost doubled from IR£ 53,652 (Euro 68,138) to IR£ 104,454 (Euro 132,657). Generalizing to the 539 individuals who engaged in parasuicide in the Limerick catchment area, total costs increased from IR£ 289,184 (Euro 367,264) to IR£ 563,007 (Euro 715,019). This study is an initial step toward the more complex task of estimating to what extent the increased uptake of hospital services is due to the consequences of parasuicide and how much is due to other aspects of the patient's health.

Keywords: Parasuicide, hospital care, costs.

Parasuicide is a major public health issue as it represents a significant cost to the individual, the health services, and to society at large [Kelleher, 1994]. There are two Irish centres in the WHO/Euro Multicentre Study of Parasuicide—Cork and Limerick—and as a result, every hospital-treated episode of parasuicide is monitored in one quarter of the country. Initial results indicate that at a national level, there are in excess of 6,000 hospital-treated episodes of parasuicide per year. The cost of treating this number of episodes is clearly significant.

In Ireland, a central element of the government's Health Strategy is aimed at achieving Health and Social Gain [Department of Health, 1994]. This means that patients should be better off as a result of their contact with the health services. Irish healthcare is funded via a mixture of public funding and private health insurance. Every citizen has access to free acute hospital treatment and outpatient treatment. Approximately 37% of the population receive a "medical card," giving them additional entitlements of free primary and secondary care, free medication, and additional health instruments.

Health-service professionals have to operate in an environment in which resources have become increasingly scarce. It is therefore essential that health funding be utilized efficiently and effectively. Cost-effectiveness is necessary but not sufficient; health professionals also have to focus on achieving appropriate outcomes. Economic evaluation can provide some objective means for decision-making and supply information with which to do this. Based on such information, health service providers can then decide upon the most appropriate management routines and treatment of suicide attempters, considering both financial constraints and the need to promote health gain.

Cost-of-illness studies identify three sources of costs, namely, direct, indirect, and intangible costs [Davey & Leeder, 1993]. Direct costs include all pay, non-pay, and other additional costs associated with the provision of a health-care service. Indirect costs include costs due to loss of productivity, for example, absenteeism and loss of opportunities in employment due to illness. Finally, intangible costs estimate the pain, suffering, and diminished quality of life due to illness. Indirect and intangible costs are difficult to measure and for this reason often tend to be excluded from cost of illness studies.

This study was undertaken for a number of reasons. The Irish National Task Force on Suicide was established in November 1995. One of its recommendations was that the problems of suicide and parasuicide, including the associated costs, be defined and quantified [Department of Health and Children, 1998]. Secondly, as part of the WHO/Euro Multicentre Study of Parasuicide, the Irish centres were given the responsibility to evaluate the costs of parasuicide. Finally, cost-of-illness studies can provide valuable information on resource use within the health services. The direct costs of treating episodes of parasuicide from Emergency Room assessment through to hospital discharge undoubtedly represent a significant burden on the health services. Consequently, cost-analysis studies of parasuicide have tended to focus on estimating these direct costs. In England, Yeo [1992] found that the average cost per patient for general hospital treatment and psychiatric assessment alone amounted to STG£ 425.64 (Euro 654.83). Runeson and Wasserman [1994] calculated the direct hospital management cost of suicide attempters in a Swedish hospital to be approximately SEK 35,000 (Euro 3,933).

The present study does not try to estimate the direct costs of treating parasuicide. Nor are the costs of specific treatment interventions, for example, drug treatment, x-rays, etc., included in this study. However, in an Irish study O'Shea et al. [1998] estimated the average weekly cost of drugs at IR£ 9 (Euro 11.43) per person in an inpatient psychiatric facility and IR£ 5 (Euro 6.35) per person in a psychiatric outpatient setting. Further research of a similar nature is required within the general hospital setting in Ireland in order to calculate specific intervention costs following parasuicide.

Previous work has shown that there is a high prevalence of physical and psychological morbidity in parasuicidal patients presenting to hospital [Kelleher et al., 1999]. The costs associated with parasuicide include the subsequent treatment of any underlying physical and psychological morbidity. We therefore hypothesize that the uptake of health services increases significantly following an act of parasuicide. To investigate this, the cost of hospital care in the year before an act is measured and compared to the cost of hospital care in the year thereafter. The costs of treatment of the immediate physical consequences and the costs of the psychiatric consultation in the general hospital following an act of parasuicide are excluded. This is an initial step toward the complex task of estimating how much of the take-up of services in the succeeding year is due to the direct consequences of the act of parasuicide and how much is due to other aspects of the patient's health.

Method

In Ireland, as part of the WHO/Euro Multicentre Study of Parasuicide, the National Suicide Research Foundation has, since July 1, 1995, been monitoring every hospital-treated episode of parasuicide in the counties of Limerick, Clare and North Tipperary. This catchment area, known as the Limerick centre, has a population of 316,875 [Central Statistics Office, 1996]. The schedule being used in the collection of data is an adaptation of the WHO/Euro Multicentre Study monitoring form [Kerkhof et al., 1994]. The Limerick Regional Hospital is by far the largest hospital in the area, treating 82% of all parasuicide episodes in the first year of monitoring. A computerized patient-based database

system has been fully operational for both general hospital and psychiatric hospital records since 1994.

The sample chosen for this study comprises the first 100 individuals who attended the Limerick Regional Hospital following an act of parasuicide after July 1, 1995. For each individual, every hospital attendance is identified in the 12 months before and after their act using the computerized patient records system. This includes every visit to the Emergency Room, general and psychiatric outpatient clinics, and every admission to inpatient care (whether general or psychiatric). In the case of admissions, the length of stay is recorded in terms of days. The initial hospital attendance due to the act is excluded.

The Limerick Regional Hospital Administrator and the Irish Department of Health and Children supplied figures for the average cost of an attendance to the Limerick Regional Hospital Emergency Room, attendances to general and psychiatric outpatient clinics, and the average daily cost of admission to general and psychiatric inpatient units. The cost of each inpatient admission is calculated by multiplying the average daily cost of admission by the length of stay. The total cost of hospital care in the year before and after the act of parasuicide is then calculated. Costs are presented both in Irish punts and in European Currency Units (IR£ 1 is worth Euro 1.27).

Results

In the first year of monitoring in the Limerick catchment area, there were 701 hospital-treated acts of parasuicide by 539 individuals (person/event ratio 1:1.3). The parasuicide population consisted of 235 males and 304 females, giving a male/female ratio of 1:1.29. The study sample of 100 individuals had a slightly higher level of repetition, engaging in 139 acts of parasuicide in the first year (person/event ratio 1:1.39). The sample consisted of 46 males and 54 females (male/female ratio 1:1.17). The higher level of repetition and relatively higher proportion of males was a consequence of using Limerick Regional Hospital only. This resulted in Limerick city residents being overrepresented in our sample (67%) compared to all parasuicides from the catchment area (51%). Repetition is more common among parasuicides from Limerick city and there are almost equal numbers of males and females. The age distribution for the sample was almost identical to that of the overall parasuicide population, with approximately half aged between 15 and 24 years, and the numbers decreasing sharply with age. Based on the monitoring registry, the index act was the first ever act for 48% of the sample. 30% had one or more acts in the year before, while the remaining 22% had engaged in parasuicide more than one year before the index act.

Table 1 outlines the cost of care, calculated for the year before and after a signal act of parasuicide in five treatment locations within the health care service. Estimates were calculated for Emergency Room attendances, general hospital inpatient and outpatient treatment and psychiatric inpatient and outpatient care.

Emergency Room

The figures relating to the Emergency Room were confined to individuals treated in the Emergency Room and subsequently discharged. While the numbers were low, there was a four-fold increase in the number of attendances (and therefore in the cost of care) between the year before the signal act of parasuicide and the year after.

General Hospital Inpatient Care

There was a 30% increase in the cost associated with general hospital inpatient care. While the number of patients involved was quite low, the costs were substantial—IR£ 17,828 (Euro 22,515) and IR£ 22,991 (Euro 29,199) in the year before and after, respectively.

General Hospital Outpatient Care

The costs associated with general hospital outpatient care in the year after were twice that of the year before.

Psychiatric Inpatient Care

There was only a slight increase in the number of patients admitted to psychiatric inpatient care. However, the associated cost was almost two and half times higher. Although the patients in both years averaged over three admissions per year, the total length of stay was far greater. The average length of stay was 8.1 days in the year before and 14.0 days in the year after.

Table 1
Cost of Care by Treatment Location

Treatment location	Year before	Year after
Emergency Room		
Patients	3	12
Attendances	4	16
Cost	IR£ 284	IR£ 1.136
(Average cost per attendance IR£ 71)	(Euro 361)	(Euro 1443)
General Hospital Inpatient Care		
Patients	15	21
Admissions	29	36
Total length of stay (days)	64	83
Cost	IR£ 17.728	IR£ 22.991
(Average cost per day = IR£ 277)	(Euro 22.515)	(Euro 29.199)
General Hospital Outpatient Care		
Patients	7	16
Attendances	12	24
Cost	IR£ 516	IR£ 1.032
(Average cost per attendance = IR£ 43)	(Euro 655)	(Euro 1.311)
Psychiatric Hospital Inpatient Care		
Patients	12	14
Admissions	37	49
Total length of stay (days)	299	688
Cost	IR£ 33.488	IR£ 77.056
(Average daily cost = IR£ 112)	(Euro 42.530)	(Euro 97.861)
Psychiatric Hospital Outpatient Care		
Patients	17	29
Attendances	141	193
Cost	IR£ 1.636	IR£ 2.239
(Average cost per attendance = IR£ 11.60)	(Euro 2.078)	(Euro 2.844)

IR£ 1 is worth Euro 1.27

Psychiatric Outpatient Care

The number of patients receiving psychiatric care as outpatients almost doubled from the year before to the year after. While there was a high number of attendances in both years, the average number per patients was slightly lower in the year after (8.3 compared to 6.7). Subsequently, there was a 37% increase in the associated cost.

Summary

32% of the sample received hospital care in the year prior to their parasuicide act compared to 48% in the year after. This represented a 50% increase in uptake of hospital services. The total costs for the 100 patients increased from IR£ 53,652 (Euro 68,138) in the year before to IR£ 104,454 (Euro 132,657) in the year after. Thus, the average cost per patient almost doubled from IR£ 537 (Euro 681) to IR£ 1,045 (Euro 1,327). If we were to generalize from the sample of 100 to the 539 individuals who engaged in parasuicide in the catchment area during the first year of the study, the total costs increased from IR£ 289,184 (Euro 367,264) to IR£ 563,007 (Euro 715,019).

Discussion

Kelleher et al. [1999] demonstrated the high prevalence of physical and psychological morbidity in parasuicid-

al patients presenting to hospital. Such individuals tend to give a history of multiple problems often having an additive effect upon one another. These may include a strong family history of mental illness and addictive behaviour, childhood stresses including physical and sexual abuse and leaving school early, particularly for males. Currently they may show depression, anxiety or misuse of alcohol and illicit drugs. There may be social pressures including relationship difficulties and loss events. The costs associated with parasuicide include the subsequent treatment of any underlying physical and psychological morbidity. By measuring the cost of hospital care in the year before and after an act of parasuicide, this paper has validated the hypothesis that the uptake of health services increases significantly following an act of parasuicide. While we believe that this increased uptake of services is due to the treatment of underlying illness, this study is just an initial step toward the complex task of estimating how much of the takeup of services in the succeeding year results from the direct consequences of the act of parasuicide and how much from other aspects of the patient's health.

The figures presented identify minimal costs to the health care service. They do not consider a number of further sources of cost including patients who may have attended other health-board-funded services. Other direct costs are incurred by external agencies such as the Prison Services or by the individual in the case of private psychiatric consultations. Such costs are outside the scope of the study, but nevertheless require resources that have not been quantified to date. While indirect costs are not measured in this study, a small number of psychiatric care studies have attempted to place a monetary value on informal care and family burden, estimating it to be up to a maximum of 16% of total care costs [Wolff, 1993]. Generalizing these findings and assuming that the increase in hospital usage before and after parasuicide is similar for both direct and indirect costs, total informal costs for the 100 patients increased from IR£ 8,584 (Euro 10,902) in the year before to IR£ 16,713 (Euro 21,225) in the year after. Average daily or attendance costs only provide conservative estimates of the cost of care. At present ward-specific costs for general hospital care are not available. The use of average costs fails to take into account the above-average staff time spent with parasuicidal patients. Ramsay, Freestone, and Silas [1982] argue that the primary cost of parasuicide to the health service is staff time, as opposed to bed occupancy.

Emergency Room and other hospital care received for the index act of parasuicide was excluded. 22% of the study sample had further acts of parasuicide in the 12 months following their index act. However, 30% had engaged in an act of parasuicide in the preceding 12 months. The vast majority of these acts would have resulted in general hospital care, as Fitzsimons et al. [1997] have shown that in cases of parasuicide where the general practitioner is the primary caregiver, the majority are referred to the general hospital. Thus, it is evident that repeated episodes do not account for the observed increase in the cost of care. The proportion of individuals receiving hospital care increased from 32% to 48% in the intervening 12 months. While the average length of stay in general hospital inpatient care was unchanged, 2.2 days in the year before and 2.3 days the year after, the average length of stay in psychiatric inpatient care increased substantially from 8.1 to 14.0 days. This resulted in psychiatric care costs more than doubling from IR£ 33,488 (Euro 42,530) to IR£ 77,056 (Euro 97,861). It is likely that this is related to the treatment of underlying psychiatric morbidity, which may have either precipitated the act or was identified as a result of the parasuicide act. Although there was a large increase in attendance at psychiatric outpatient clinics, the associated increase in cost was less significant because of the relatively low cost per visit.

The significant increase in health service costs following acts of parasuicide as identified by this paper further highlights the need to address the problem of parasuicide. If, as we hypothesize, the increased costs result from the treatment of underlying illness, then a public health approach to parasuicide focussing on early recognition and intervention is required. However, it appears that much work remains to be done. Hawton et al. [1998], in their systematic review of trials that examined the effectiveness of treatments of patients who have deliberately harmed themselves, concluded that considerable doubt remains as to which forms of treatments are most effective. Rupp, Gause, and Regier [1998] outline the research policy implications of cost-of-illness studies in psychiatry. The dilemma faced by most clinicians and administrators is how to provide a quality service in the face of increasing patient demand and reduced resources. The National Suicide Research Foundation is currently undertaking

further work to establish the indirect and intangible costs of parasuicide.

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The late Dr Michael J Kelleher, MD FRCPsych FRCPI, was the founder of the National Suicide Research Foundation, Cork, Ireland and published widely in the field of suicidology. At the time of his death in August 1998, he was a Clinical Director of Psychiatry in Ireland's Southern Health Board, Clinical Lecturer in Psychiatry at University College, Cork, a member of the editorial board of several academic journals including Crisis, and the First Vice-President of the International Association for Suicide Prevention. He was a driving force behind the decriminalization of suicide in Ireland in 1993 and a major contributor to the Irish National Task Force on Suicide.