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ORIGINAL PAPER

Eberhard A. Deisenhammer · Michael Huber · Georg Kemmler · Elisabeth M. Weiss · Hartmann Hinterhuber

Suicide victims' contacts with physicians during the year before death

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Abstract Suicide victims frequently have had contact with physicians during the last year before death. However, oftentimes suicidal ideation is not reported overtly. This study investigates the course of contact rates of suicide victims with physicians during the year before death. Official suicide data and insurance company data were linked for 317 subjects who had committed suicide between 1998 and 2002. Quarterly contact rates with physicians during the respective last year of life were compared. Contact rates of suicide victims with physicians varied considerably concerning age, gender and physicians' specialization. Contacts with 'any physician' and general practitioners generally increased over the year, most pronounced in men and in those older than 60 years. In contrast to males, female contacts to psychiatrists increased until one quarter before suicide and then dropped significantly shortly before suicide. A pattern of contacting more than one general practitioner per quarter occurred significantly more often in the suicide quarter than during the year before, predominantly in those older than 60 years. Such a 'doctor shopping' behavior may reflect an intensified patients' searching for adequate help. Taking contact behavior changes into account may increase the chance to identify individuals at risk and thus may contribute to suicide prevention.

Key words suicide · health care contacts · general practitioners · psychiatrists · prevention

E.A. Deisenhammer (✉) · M. Huber · G. Kemmler
E.M. Weiss · H. Hinterhuber
Department of General Psychiatry
Innsbruck Medical University
Anichstrasse 35
6020 Innsbruck, Austria
Tel.: +43-512/504-81612
Fax: +43-512/504-23628
E-Mail: eberhard.deisenhammer@i-med.ac.at

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Introduction

Physical and to an even higher degree mental illness is associated with an increased risk of suicidal ideation and behavior [8, 12, 14, 27]. Therefore, a crucial suicide prevention task of physicians, particularly those working in primary care settings, consists in the recognition of a suicidal crisis in patients attending their practice. Clinical awareness and training of primary health care personnel in recognizing and treating both depression and suicidality have been named among the most important suicide prevention strategies [5, 13]. Numbers of suicide victims who have had contact with a general practitioner (GP) and/or a mental health specialist before death vary considerably [23] depending on a variety of factors including the population which has been studied and the structure of the given health care system. One-year contact rates of suicide victims range between 14% [15] and 93% [4] with higher rates for contacts with GPs than for those with mental health services [18].

Most of the studies so far have focused on the rates of suicide victims having had contact with the health care system at all or on the time span between the last contact and suicide, thus implying that just having contact with a patient may enable the physician to identify those at risk for suicide. However, although suicidal ideation appears to be frequent in outpatient groups [7, 22] suicide intent is rarely communicated spontaneously during the last health care appointment [16] and the intensity of suicidal ideation may vary considerably [32]. Thus, the ability of primary care physicians to contribute to suicide prevention has been questioned [10, 11]. It remains essential to improve the capability of physicians to detect a potentially suicidal crisis and identify individuals at risk among their patients. Behavioral features such as changes in frequencies of contacts with his/her doctor may complement other verbally communicated and non-verbal clues.

The aim of this study was to investigate frequency and changes in contact rates of suicide victims with physicians in general, GPs and psychiatrists/neurologists during the 12 months preceding suicide in order to identify those time periods within the physician-patient relationship when heightened awareness and cautiousness should be exercised.

Materials and methods

Suicide data were derived from the Tyrol Suicide Register which is a cooperation project of the Department of Psychiatry, Innsbruck Medical University, and the Security Bureau of Tyrol. For every suicide which is committed in Tyrol a variety of data including name, sex and date of birth of the victim, time, place and method of the suicide, potential motives, and others are assessed. The project started in January 1995, full data provision was temporarily interrupted in October 2002.

Data on suicide victims' contacts to physicians were obtained from the 'Tiroler Gebietskrankenkasse' (TGKK) which is the main regional insurance company of Tyrol. In Austria, virtually the entire population is insured by one of the respective companies. The TGKK is by far the largest of these health care providers in Tyrol covering a total of 76% of the population. By combining data of suicide victims with the TGKK's insurants register the numbers of contacts of every particular suicide victim with all physicians who have a contract with the TGKK were generated. However, since the TGKK processes the health care service data quarterly, only frequencies of physicians' contacts by quarter were available for each suicide victim. The TGKK initiated electronical data processing in the fourth quarter of 1997. Given one year of assessing contact data before death, suicide data preparation for this study was possible for the period October 1998 to September 2002, thus comprising 4 years.

Comparisons were made between the mean frequencies of contacts to physicians in the last four quarters preceding suicide. As information about contact rates was available only on the basis of quarter years, the number of contacts in the quarter in which the suicide occurred had to be corrected according to the number of days the subject was still alive during this quarter. These contact rates during the 'suicide quarter' were generated differentially according to when the suicide was committed. If the suicide occurred during the second half of a quarter, i.e. if the subject still lived for more than 45 days during this quarter, the number of contacts with a physician was multiplied by length of quarter/days alive (e.g., if the suicide occurred on the 60th day of a quarter and the total quarter length was 90 days, the number of contacts was multiplied by 90/60 = 1.5). For subjects who committed suicide in the first half of a quarter this extrapolation method might lead to an insufficient reference period and thus to unreliable results. Therefore, in this case the suicide quarter and the preceding quarter were merged resulting in a reference period of 91 to 135 days in length. The number of contacts was corrected for the actual length of this 'suicide quarter' using the same formula as above. Contact rates were calculated separately for 'any physician', i.e. all physicians who have a contract with the TGKK, GPs and psychiatrists/neurologists. Contacts with the latter group, however, were nearly exclusively contacts with psychiatrists.

Non-parametric tests were used throughout, as frequencies of contacts clearly deviated from a normal distribution. For comparing contact rates across quarters (suicide quarter, immediately preceding quarter, second, third and fourth quarter before suicide) the Friedman test was employed. If this test indicated significant differences between quarters, pairwise comparisons between the individual quarters, particularly between suicide quarter and preceding quarters, were performed by means of the Wilcoxon matched-pairs test. These analyses were performed for contacts with the particular physicians groups and for age and gender subgroups.

Comparisons between subgroups of suicide victims (males vs. females, age groups) were performed by means of the Kruskal–Wallis test and Mann–Whitney U-test. The same statistical methods were applied for analyzing rates of changes of GPs per quarter.

With regard to potential ethical concerns deriving from the use of personal data of suicide victims the Austrian Data Protection Commission was contacted and asked for approval. The Commission expressed no objections against the realization of the study.

Results

During the observation period from October 1, 1998 to September 30, 2002 a total of 471 suicides were registered in Tyrol, corresponding to a mean annual suicide rate of 17.4 per 100,000 inhabitants. Of these, 154 persons were not traceable in the general TGKK's insurants register. Reasons for this were mainly that the particular suicide victim had not been insured with the TGKK but with another company (133 cases), had been living outside Tyrol (19 cases) or name or date of birth data were incomplete (2 cases).

Thus, 317 suicide victims (67%) remained for further analysis. The sample did not differ from those suicide victims who were not included into the analysis in terms of gender and suicide method used. However, included suicides were significantly younger (45.3 ± 19.1 years vs. 53.5 ± 18.9 years; $P < 0.001$). This difference appears to be due mainly to the higher age of suicide victims from other countries committing suicide in Tyrol during holidays or an occupational stay or possibly entering the country specifically for the purpose of suicide.

Demographic data of the study sample are summarized in Table 1. About 159 suicide victims (50.2%) had no contact at all with a doctor during the suicide quarter and 70 (22.1%) had no contact during the entire last year before death.

Figure 1 displays the mean contact rates with 'any physician' during the last year before suicide. Generally, an increase in contact frequencies over the entire year was found, resulting in a highly significant overall difference between the quarters involved

Table 1 Demographic data of suicide victims

	Suicide victims, *n* (%)
Gender	
Males	233 (73.5)
Females	84 (26.5)
Mean age	45.3 ± 19.1 years
Age groups	
<40 years	147 (46.4)
41–60 years	101 (31.9)
61+ years	69 (21.8)
Suicide methods	
Hanging	126 (39.7)
Shooting	42 (13.2)
Jumping	33 (10.4)
Train	31 (9.8)
Drowning, drug or gas poisoning, stabbing	85 (26.9)

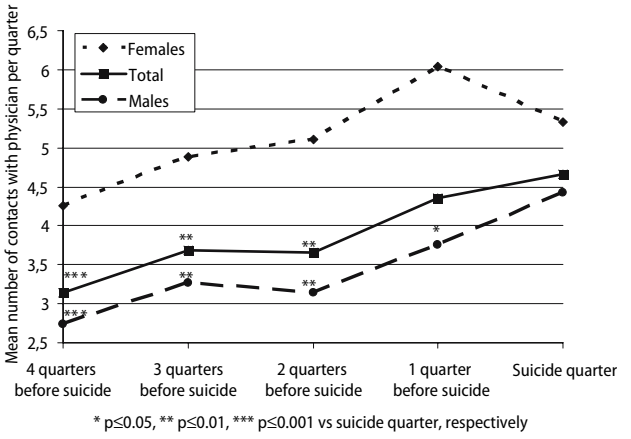

Fig. 1 Frequency of contacts with 'any physician' (not specified) during the year preceding suicide

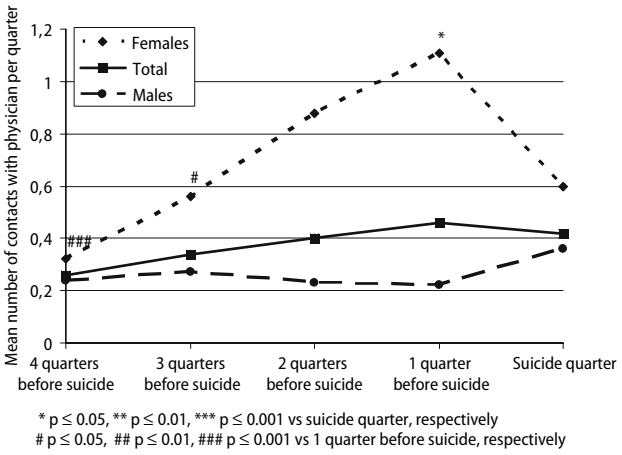

Fig. 3 Frequency of contacts with psychiatrists and neurologists during the year preceding suicide

($P < 0.001$, Friedman test). In particular, contact frequencies in the suicide quarter were significantly higher than in the second, third and fourth quarter before suicide. For the subgroup of male suicide victims, the same held true. In addition, the increase from the quarter preceding suicide to the suicide quarter became significant. For females, there were no significant differences between the suicide quarter and any of the preceding 3-months periods.

Figure 2 shows the frequencies of contacts with GPs. Again a significant increase of contacts over the entire year before suicide was observed ($P < 0.001$, Friedman test). Contact rates in the suicide quarter were significantly higher than in all preceding quarters except the one immediately before the suicide quarter. The same pattern was found in the subgroup of male subjects, whereas no significant changes over time were seen in females.

Unfortunately, for data protection reasons no data of TGKK insurants who did not commit suicide, thus constituting a control group, were available. However, overall data provided by the TGKK on contacts of the entire TGKK insurant population with general practitioners indicate generally lower rates (mean contact rate per quarter, 1.08).

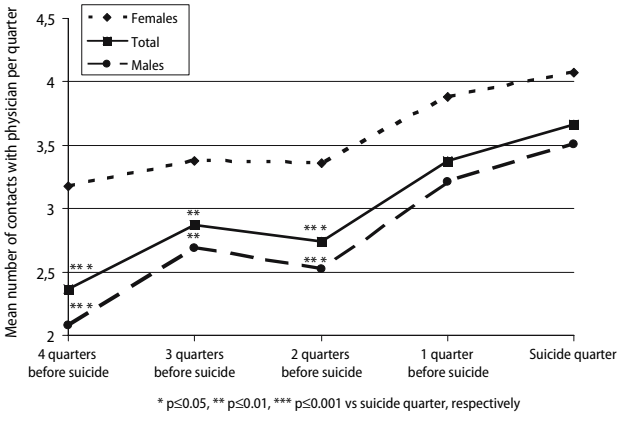

Fig. 2 Frequency of contacts with general practitioners during the year preceding suicide

In Fig. 3 contact rates with psychiatrists/neurologists are displayed. For this group of physicians, only fairly small changes of contact frequencies over time were observed in the total sample of suicide victims ($P = 0.038$, Friedman test). However, there was a clear gender difference with females showing a significant increase in contact frequencies up to the quarter immediately preceding the suicide quarter followed by a sharp and significant decline in the last 3 months before suicide. In contrast, contact rates of males remained more or less unchanged over the year.

In all physicians groups, women had higher contact rates than men. Contact rates increased with higher age (Fig. 4; for all quarters considered, differences between the three age groups were highly significant; $P < 0.001$, Kruskal–Wallis test).

As an index for instability in suicidal patients' contact behavior, rates of 'changing doctors', i.e. having contacts to more than one GP per quarter,

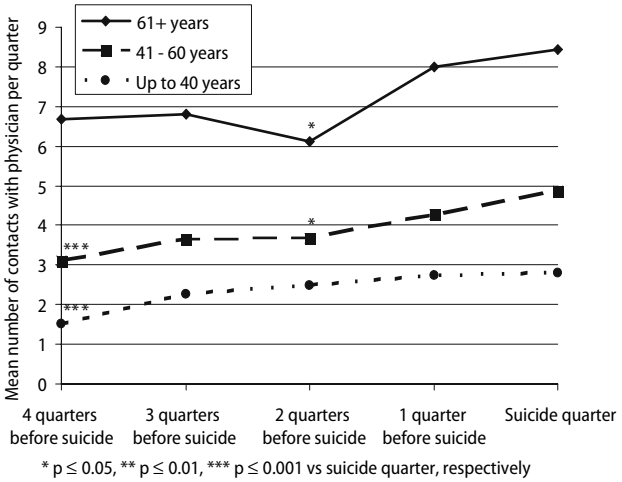

Fig. 4 Frequency of contacts with with any physician during the year preceding suicide by age group

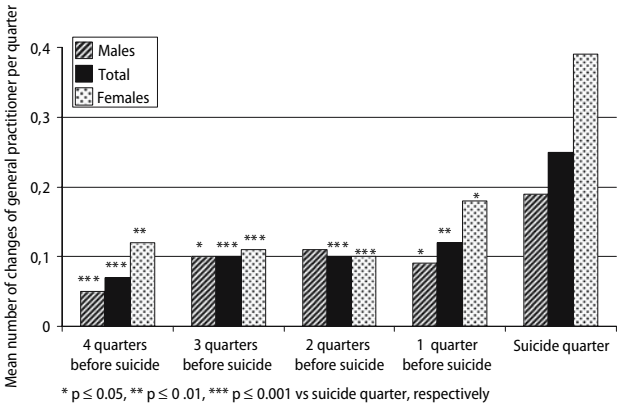

Fig. 5 Rates of 'changing general practitioner' during the year preceding suicide

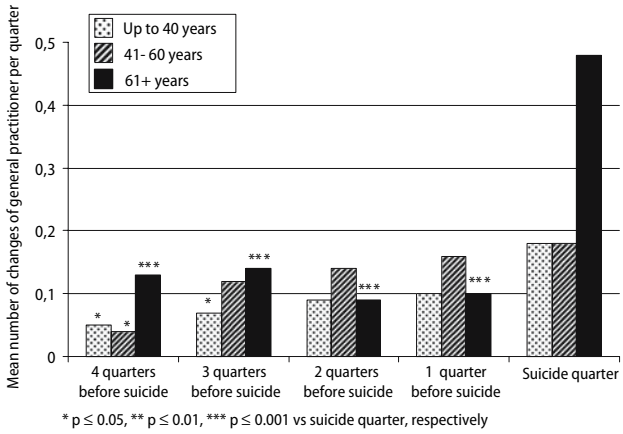

Fig. 6 Rates of 'changing general practitioner' during the year preceding suicide by age group

were assessed. Figure 5 shows that such a behavior was significantly more prevalent in the suicide quarter than in the quarters before in both sexes. Figure 6 reveals that this phenomenon is predominantly due to suicide victims older than 60 years. In Figs. 5 and 6 mean numbers of changes of GPs are displayed. A value of 1 signifies one change of GPs, thus, e.g., the value of 0.25 (the value for suicide quarter, both sexes) indicates that on average every fourth suicide victim had contacted two GPs during this quarter.

Discussion

The results of this study on suicide victims' contacts to physicians in the year preceding suicide show a general increase in contact frequencies during this 1-year period. However, considerable differences in the contact behavior were found with regard to suicide victims' gender and physicians' specialization.

Most studies on health care contacts before suicide have focused on whether at all or how long before death a suicide victim had contact with the health care system [18, 23]. However, patients do not typically communicate suicidality unequivocally to their doctors [17]. Particularly those without a psychiatric history appear to be difficult to identify [25]. Alertness for non-verbal hints and noticeable behavioral features may thus be helpful in identifying individuals at risk for suicide.

Those results of our study which relate to GPs are in line with prior reports. Appleby et al. [2] found a significant increase in the number of visits to GPs for men during the 3 months before suicide. Health care contacts also appear to cluster in the last month before a suicide attempt [20, 30]. Andersen et al. [1] reported a tendency of GP consultations to rise in the last half year before death. The increase in contact frequencies with any physician and GPs which reached statistical significance in our study was most pronounced during the same period (interestingly, the steepest rise did not take place in the period between the last quarter before suicide and the final quarter but between the second and the last quarter before the suicide quarter; Figs. 1, 2, 4). Assumed that contacting a doctor can primarily be interpreted as an effort to find help while experiencing a crisis, this result suggests that such a period of suffering may well begin a long time before it results in suicide. However, this crisis does clearly not need to be a manifestly suicidal one over the whole period.

While the increase in contacts with GPs failed to reach statistical significance in females it was highly significant in men. The Gotland Study [26] investigated the effects of an educational program for GPs which aimed at increasing the knowledge on recognition and treatment of depression. It resulted in a 60% reduction of suicides in the region under study. However, this preventive effect was limited to women. It was concluded that men at risk for suicide may disclose depressive symptoms less often than women and are thus less likely detectable for physicians even well trained for diagnosing depression. Our results suggest that identification of male patients at risk for suicide which is the physician's first step to prevention may be feasible, too, although possibly not by focusing on typical signs of suicidality and depression alone but by taking the contact behavior to doctors additionally into account.

The pattern of contacts with psychiatrists differed considerably between males and females. While men showed no major changes in attendance rates, contacts of female suicide victims to mental health specialists increased significantly until one quarter before suicide and than dropped abruptly during the last time before death. This remarkable course may be due to a process which has primarily been described for psychiatric in-patients before suicide and has been termed 'malignant alienation' [31]. During the phase of self-perceived crisis female patients may increasingly engage in seeking help from a psychiatrist but then, at a certain point of time (which we definitely should try to learn more about) they disrupt the therapeutic relationship and are no longer reachable for psychiatric intervention. Such a withdrawal may

also reflect unmet needs of these patients [24]. Another explanation for the reduction in contact rates to mental health specialists shortly before suicide might be that female patients who were recognized as seriously suicidal were—as a consequence—admitted for in-patient treatment [9]. However, even after exclusion of those female patients who were newly admitted to a psychiatric ward in the suicide quarter or readmitted after a time of at least three months without psychiatric hospital stays, the drop in contact frequencies with psychiatrists remained statistically significant. Moreover, an increased admission rate should also be mirrored by a corresponding decrease in contacts with GPs what clearly did not take place.

Potentially useful in terms of recommendations for suicide prevention is the significant increase in 'changing the general practitioner' during the suicide quarter which was particularly true for older suicide victims. 'Doctor shopping' behavior, i.e. contacting more than one physician of the same specialization for the same medical problem, has mainly been associated with somatoform disorders [29]. The tendency to contact more than one GP may on the one hand be interpreted as an increased help-seeking behavior when the subjective need for support is not satisfied by the present doctor. In the population studied here, it might also have been part of a strategy to collect prescriptions for drugs in order to commit suicide by drug overdose. Doctor shopping and increased drug-seeking behavior has been found for young heroin users in the year before fatal overdose similarly reflecting possible ambiguous motives [19]. Drug ingestion is a generally common method for suicide attempts in Austria. However, in our study poisoning was less frequent among suicide victims who had contacted more than one GP during the suicide quarter than among those who had not. It cannot be excluded though that the intent to collect tablets was at least one motive for contacting various doctors. In any way, a pattern of contacting multiple GPs within a short period of time appears to be a risk factor for suicide and should—if identified—give rise to an intensified assessment of current suicidal risk, particularly in those aged 61 and older.

The findings of this study are limited by several issues. First, the results are confined to TGKK insurants which may not fully represent the general population of the region. Second, we were not able to include a 4-years control group of insurants who did not commit suicide. However, data of contacts of the general TGKK insurants clientele with general practitioners indicate that suicide victims appear to have higher contact frequencies at least with this group of physicians. Third, only contact rate data for physicians who are under contract of the TGKK were available. Fluctuations from and to doctors without TGKK contracts or non-medical psychotherapists during the observation period cannot be excluded. However, since treatment provided by contract-free physicians is associated with considerably higher excess costs for the insurant it is utilized mainly by higher-income population groups and changes between these health care provider groups are uncommon.

As far as suicide prevention is concerned, several clues may be derived from the results of this study. An increase of 40% in physician contacts for males over a half year is a noticeable change which should give rise to a generally higher alertness to assess potential suicidal ideation. Psychiatrists should particularly be aware of a possible suicidal crisis in female patients who considerably increase the frequency of visits (in this study, 71% over 3 quarters) and then suddenly do not show up anymore. These doctors may actively try to contact these patients or at least the respective GP who may not be confronted with such a patient's retreat. A more intensified interchange of doctors in matters of their patients, for example by participating in Balint groups, may contribute to early detection of patients contacting multiple physicians and thus increase alertness for individuals at risk for suicidal behavior. In general, including questions on life satisfaction and vitality in every patient's assessment by any physician remains crucial.

In this context it is of paramount importance to know more about the patients' reasons for contacting doctors before suicide, the complaints and symptoms they present, and to understand the in most cases hidden clues for suicidality since only a minority of suicidal patients clearly communicate suicidal ideas to their doctors. A study on the motives for contacting a physician and a possible change of these motives during the observation period in this suicide population is currently being planned.

Shaping a profile for groups or individuals at risk for suicide is one of the main tasks in suicide research and suicide prevention. Given the high number of patients who contact a primary care practice every day and the limited time doctors are able to dedicate to their patients the problem of accurately screening patients for suicide risk is even more challenging in this setting. However, taking the patients' contact behavior to doctors additionally into consideration may increase the likelihood to identify individuals at risk. Suicide prevention in a medical practice is, at least to a certain extent, feasible, respective strategies have been suggested [3, 6, 21, 28]. The results of this study may contribute to the abilities to identify patients at risk thus enabling doctors to take appropriate measures for suicide prevention.

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