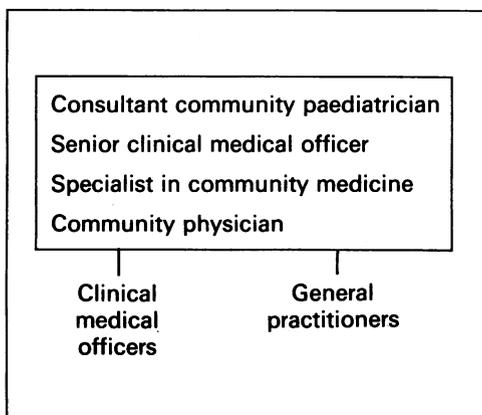


Doctors in the child health services



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The ABC of 1 to 7 was first published in the "BMJ" in 1981 and then in book form in June 1982. Dr Bernard Valman has now substantially revised the book, and this is the last of six chapters that we are also publishing in the "BMJ." The revised edition of the book will be published in the late spring.

The medical team leader may be one of a number of doctors; a consultant community paediatrician or a senior clinical medical officer and, occasionally, a specialist in community medicine have the necessary clinical paediatric skills to fulfil this role. In other districts the district medical officer or a similar community physician is in charge. Community paediatricians and a number of senior clinical medical officers are fully accredited in paediatrics, with both hospital and community experience. Many other senior clinical medical officers and a few specialists in community medicine have many years' clinical experience, whereas community physicians and the newer specialists in community medicine have an epidemiological training.

Many clinical medical officers receive in-service training and they have some paediatric experience, but this is not obligatory. It is hoped that in the future they will have a three-year vocational training which will also be acceptable for general practice.

Medicine and the Media

The aftermath of Angie's overdose: is soap (opera) damaging to your health?

STEPHEN PLATT

Abstract

IN A STUDY designed to evaluate the behavioural impact of a fictional parasuicide—namely, Angie's overdose on the popular television soap opera *EastEnders*—information about cases of deliberate overdose treated in accident and emergency departments in 63 hospitals throughout Britain was obtained for the week after the televised overdose (experimental period) and the week before the overdose (control period). After adjusting for trends in the equivalent weeks in a control year (1985) the increase in the cases of parasuicide treated by hospitals during the experimental week was not found to be significant. A significant increase (31%) was found among people aged ≥ 45 , but this is not thought to be reliable. The increase among women alone (21%) was significant with a one tailed test. Contrary to expectations there was a positive association between trends in overdose and distance from London—that is, the further the distance of the region from London the greater the increase in cases of overdose during the experimental period—and a negative association between trends in overdose and viewing

figures—that is, the higher the viewing figure the less the impact on the incidence of overdoses.

These findings do not lend support to the claim that there was a strong imitation effect after this televised parasuicide.

Introduction

The possible role of imitation in epidemics or clusters of suicidal behaviour has long been a focus of interest and concern. Durkheim's contention that "perhaps no other phenomenon is more readily contagious"¹ is supported by more recent evidence of time-space clustering of both suicides (fatal deliberate self harm) and parasuicides (non-fatal deliberate self harm) in various institutional and community settings.²⁻¹¹ It is the alleged effect of the representation and reporting of these behaviours in the mass media (the "Werther effect"),¹² however, that has been fiercely debated over the past 20 years.¹³

The work of Phillips *et al* has consistently pointed to a strong relation between reports of non-fictional suicide in newspapers or on television and a subsequent increase in the incidence of suicide.^{12 14-16} These studies have been criticised on methodological, technical, and theoretical grounds,¹⁷⁻¹⁹ but the original findings have recently been replicated in a most convincing fashion.¹⁵ The existence of a Werther effect after the fictional portrayal of suicide on television has also been shown.^{20 21} Research evidence about the likely impact of the portrayal of parasuicide by the mass media, however, is

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more equivocal. Phillips showed that the incidence of suicides (particularly of women) was found to increase immediately after suicide stories in soap operas (11 of his sample of 13 being, in fact, parasuicides).²² Kessler and Stipp, however, using a more precise time-series regression approach and an enlarged sample and correcting errors made by Phillips in dating the soap opera suicide story, failed to discover any evidence linking parasuicide in soap operas to subsequent suicide deaths in real life.²³

This study is, to my knowledge, the first systematic attempt to test the imitation hypothesis in which the stimulus event is a parasuicide in a soap opera and the dependent variable is a change in the incidence of parasuicide. An objective and thorough evaluation of the aftermath of this fictional event was considered to be necessary in view of the limited and conflicting evidence from different cities in England²⁴⁻²⁷ and the criticism of the BBC for encouraging copycat suicidal behaviour.²⁸

The programme

EastEnders is an extremely popular BBC television soap opera set in London's East End. The main focus of the episode of Thursday 27 February 1986 was the tempestuous relationship between the publican ("Dirty") Den and his wife Angie. Angie is portrayed as an attractive woman in her middle to late 30s with a drink problem that she refuses to recognise. Den is having yet another affair, and Angie's distress is intensified when she learns that Den has been staying with his lover.

In an early scene Angie buys a large bottle of aspirin. Later she is interrupted when unscrewing the bottle, evidently intent on taking an overdose. In the final scene she is alone, drunk, and in tears. The camera closes in as she pours pills into her hand, puts them in her mouth, and drinks them down with neat gin.

This episode was watched by 14.4 million viewers aged 4 and over, or 28% of the potential audience, the fifth highest viewing figure of the week. The actual overdose was edited out of the omnibus edition on Sunday 1 March.

Study hypotheses and design

The following hypotheses were tested in the study: (a) there will be a significant overall increase in the incidence of overdoses in the week after the episode compared with the preceding week; (b) there will be a significant increase in the incidence of overdoses among women, particularly those aged 30-44; (c) there will be a greater increase in the incidence of overdoses in London than in other areas of Britain; and (d) there will be a greater increase in the incidence of overdoses in areas where viewing figures are higher.

The number of cases of deliberate overdose treated in accident and emergency departments in the week after the episode (the experimental period) was compared with the number treated in the week before the episode (the control period). The experimental period covered the week Friday 28 February to Thursday 6 March 1986 inclusive, and the control period ran from Friday 21 to Thursday 27 February 1986 inclusive.

Because this type of before and after analysis may be invalidated by a temporal or seasonal trend in parasuicide—though this is unlikely to be appreciable in such a short period—two further sets of data were sought. Firstly, information about overdoses treated by hospitals was obtained daily over five weeks in 1986, including the experimental and control periods, to identify more clearly any possible temporal trends. Secondly, baseline data for 1985, covering the fortnight equivalent to the control and experimental weeks in 1986, were made available. It was assumed that the 1985 figures would present a "normal" picture of the incidence of parasuicide under "normal" circumstances. Any increase in the number of cases of overdose treated by hospitals in the experimental period in 1986 compared with the corresponding control period, after adjusting for trends in 1985, would be a consequence of the screened episode.

Methods

In May 1986 letters were sent to all hospitals with large accident and emergency departments in towns and cities in Britain with a population of more than 60 000. Information was sought about the number of cases of deliberate overdose seen in the accident and emergency department each day over the five weeks from Monday 10 February to Sunday 16 March. Each patient was classified by gender and age group. A standard definition of deliberate drug overdose was supplied to increase the reliability of data recording. A further letter was subsequently sent to each hospital that replied to the first inquiry, requesting a count of the number of cases of

deliberate drug overdose for corresponding control and experimental weeks in 1985. Reminders were sent at both stages to hospitals that had not responded. All analyses reported here are based on hospitals that supplied information for both 1985 and 1986.

Information about the regional viewing figures for the *EastEnders* episode was obtained from the Independent Broadcasting Authority. To facilitate the testing of hypotheses (c) and (d) each hospital was allocated to one of the regional areas defined by the Independent Broadcasting Authority. Areas with fewer than four hospitals were omitted from these analyses.

The significance of the change in the 1986 experimental period (e86) compared with the corresponding control period (c86) taking into account the trends over the same periods in 1985 (e85 and c85, respectively) was assessed with the Wilcoxon matched pairs signed ranks test.³¹ This test is suitable when two related samples (consisting, in this case, of hospital₁ in 1985 and 1986, hospital₂ in 1985 and 1986, and so on to hospital_n in 1985 and 1986) are being compared. The two scores used in the analysis were the signed difference between e86 and c86 and the signed difference between e85 and c85. The difference score (d) for each hospital was calculated as $d = (e86 - c86) - (e85 - c85)$.

Separate Wilcoxon tests were carried out for the whole sample, for men and women separately, for each age group separately, and for each gender/age group combination (12 analyses). A significant increase in the incidence of overdose during the 1986 experimental period, however, was predicted only for the total sample, for women, and for women aged 30-44 (hypotheses (a) and (b)). Hypotheses (c) and (d) were evaluated with the Spearman rank correlation coefficient.³¹ An adjusted change score % for each region was calculated as $\text{adjusted change score \%} = (1 - (E86/C86 \times C85/E85)) \times 100$, when E86 was the total number of episodes in the 1986 experimental period in each region, C86 was the total number of episodes in the 1986 control period in each region, and E85 and C85 were the regional totals in the 1985 experimental and control periods, respectively. Two tailed tests of significance were used throughout.

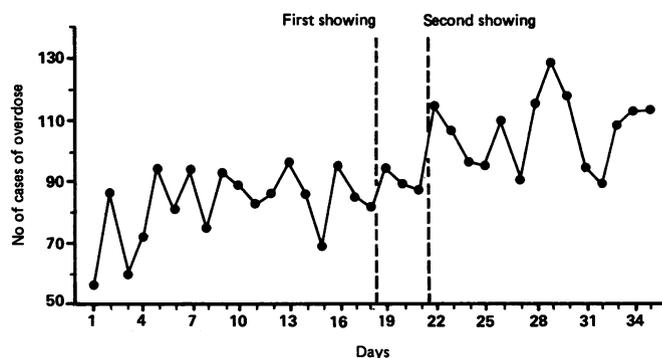
Results

RESPONSE RATE

Of 154 hospitals approached, 79 (51%) supplied usable returns for 1986. Information for 1985 was provided by 63 hospitals (80% of the follow up sample and 41% of the original total). This final sample was found to be representative of the geographical distribution of hospitals, with little variation in the response rates among regions (minimum 35%, maximum 47%, $\chi^2 = 1.24$, 6 df, NS).

TRENDS IN 1986

The figure shows the daily totals of cases of deliberate drug overdose treated in 63 accident and emergency departments throughout Britain during the period 10 February (day 1) to 16 March 1986 (day 35). On Friday 27 February, or day 19 (the day after the key episode), there was a 15% increase in cases compared with the previous day (94 v 82). On Monday 3 March, or day 22 (the day after the omnibus edition), there was a more substantial increase of 31% compared with the previous day (114 v 87). This second increase cannot be attributed to the repeated showing of the episode, as the actual overdose was omitted on that occasion. It may be more plausibly considered to be a "lagged" effect of the original episode. At least until day 29, however, the overall trend in the number of cases of overdose was



Number of cases of deliberate overdose admitted to 63 accident and emergency departments in Britain from 10 February to 16 March 1986.

upwards (mean daily increase=5%), and there were four occasions outside the experimental period when daily increases similar to, or greater than, 31% were recorded: +51% between days 1 and 2, +31% between days 4 and 5, +38% between days 15 and 16, and +28% between days 27 and 28.

COMPARISONS BETWEEN EXPERIMENTAL AND CONTROL WEEKS IN 1986 AFTER ADJUSTING FOR TRENDS IN 1985 (HYPOTHESES (a) AND (b))

Table I shows the total cases of overdose in the experimental and control weeks in 1985 and 1986 for each type of sample. Changes in the incidence in the total sample, in women only, and in women aged 30-44 were all as predicted, but none was significant after the trends in 1985 had been taken into account. Only one of the other analyses produced a significant finding: an increase was noted among people aged ≥ 45 ($z=2.09$, $p<0.05$).

Discussion

The findings presented in this study are somewhat conflicting. There was a 15% increase in the total number of cases of self poisoning during the day after the broadcast and an even larger increase (31%) three days later. When evaluating the significance of these changes, however, we must take into account the upward trend in the number of cases of deliberate overdose during the period under review; the equally or more dramatic changes that occurred outside the experimental period; and the failure to show that the increase in the experimental period was significantly greater than chance after controlling for trends in 1985.

The significant increase in those aged ≥ 45 is unpredicted and puzzling. Identification with Angie would be most likely to occur in the 30-44 age group (to which Angie belongs) or in the 15-29 age

TABLE I—Cases of deliberate drug overdose treated in 63 accident and emergency departments in selected weeks in Britain in 1985 and 1986

Sample	1985			1986			Wilcoxon test z score
	Control week	Experimental week	% Change	Control week	Experimental week	% Change	
Whole sample	600	613	+2	599	681	+14	1.10
Aged 15-29	286	311	+9	342	375	+10	0.04
Aged 30-44	180	174	-3	154	173	+12	1.01
Aged ≥ 45	123	101	-18	86	113	+31	2.09*
All women	361	345	-4	352	425	+21	1.86
Aged 15-29	176	175	-1	190	230	+21	1.21
Aged 30-44	108	99	-8	92	113	+23	1.07
Aged ≥ 45	73	60	-18	58	73	+26	1.62
All men	239	268	+12	247	256	+4	0.69
Aged 15-29	110	136	+24	152	145	-5	1.12
Aged 30-44	72	75	+4	62	60	-3	0.3
Aged ≥ 45	50	41	-18	28	40	+43	1.68

* $p<0.05$ (two tailed test).

AREA ANALYSES (HYPOTHESES (c) AND (d))

Information from 58 hospitals in seven regions was available for these analyses. Table II shows that the greatest adjusted increases in the experimental period were in Yorkshire (+36%) and the north east (+36%), while the London region actually experienced a decline (-7%). Overall the association between trends in the number of overdoses and the distance from London was significantly positive—that is, the further the distance of the region from London the greater the increase in the number of overdoses in the experimental period ($r_s=0.89$, $p<0.05$). This finding was contrary to that predicted.

TABLE II—Change in incidence of overdose during 1986 experimental period, television rating, and distance from London

Region	No of hospitals*	Adjusted % increase or decrease in experimental period (rank)	Television rating† (rank)	Distance from London (rank)
Yorkshire	6	+36 (1)	24 (6)	2
North east	4	+36 (2)	24 (6)	1
Midlands	12	+29 (3)	29 (2)	4
North west	13	+14 (4)	28 (4)	3
South and south east	5	+3 (5)	24 (6)	6
East	5	-4 (6)	29 (2)	5
London	13	-7 (7)	31 (1)	7

* Five hospitals were omitted from this analysis.

† Rating as % of potential audience aged ≥ 4 who watched *EastEnders* episode.

Table II also gives the regional viewing figures for the *EastEnders* programme. The highest viewing figure was found in London (31%), with the audience size tending to decrease as the distance from London increased (the south and south east excepted). Contrary to expectations the relation between trends in overdose and regional viewing figures was negative (albeit not significantly)—that is, the higher the viewing figure the less the impact on the incidence of overdoses ($r_s=-0.62$, NS).

group, as teenagers and young adults are likely to be more vulnerable to imitative influences than older people.¹⁶ Two empirical findings suggest that this may in fact be an unreliable result. Firstly, the figures supplied by the Independent Broadcasting Authority show that the programme was of considerably less interest to those aged ≥ 45 than to those aged under 45. Secondly, the increase in the incidence of overdoses among men aged ≥ 45 is greater than the increase among women of the same age (table I).

The associations between the increased incidence of overdose and the greater distance from London and between the change in the incidence of overdose and viewing figures, though unexpected, might be partially explained by geographical variations in the size of populations at risk. The north east of England is an area of high unemployment, economic deprivation, and poverty,³² factors that are known to be strongly associated with parasuicide.³³⁻³⁵ In these and many other respects the London region is more favoured. The northern and Yorkshire areas have considerably higher than average incidences of people admitted to hospital because of self poisoning while the Thames regional health authorities have incidences lower than average.³⁶ It therefore seems reasonable to surmise that the north east of England contains (proportionately if not absolutely) more people who are vulnerable to parasuicide. A stimulus or trigger event, such as Angie's overdose, might have more dramatic and far reaching consequences in such an area than in London.

Though the increase among women was not significant with a two tailed test, it could be argued that the directional hypothesis requires a one tailed test. With a one tailed test the increase in the number of women admitted to hospital because of an overdose was significant ($p<0.05$). Before this is accepted as evidence in support of the imitation hypothesis, however, several plausible alternative explanations need to be considered.

Firstly, the televised overdose may have merely precipitated or brought forward overdoses that would have occurred in the near future even without this stimulus. Figure 1 shows that the incidence of overdoses continued to increase after the experimental period. In fact the 21% increase among women during the experimental week

(table I) was followed by a further 10% increase in the subsequent week. As a significant effect of the media has been shown to last for up to 10 days,¹⁴ however, it may be incorrect to expect to find a decrease in the incidence of overdoses so soon after the stimulus event.

Secondly, the definition of a deliberate overdose used by hospital employees in charge of recording information for the study might have been biased. If the staff had become sensitive to parasuicidal behaviour as a result of the programme they might have classified a broader range of cases as being overdoses (some of which previously would have been considered to be accidental). This possibility, however, is rather unlikely on two counts: firstly, most protocols would have been completed by administrative staff, who had no direct contact with patients; and, secondly, we made safeguards against such an eventuality, including providing a standard definition of overdose and omitting the date of the broadcast in all correspondence.

Thirdly, there might have been a bias in referral among people taking overdoses and their families. The programme might have alerted people to the fact that hospital treatment is required for an overdose and led to more use of hospital facilities after the programme than before. That this bias would have had to operate in a selective manner (on women only) makes its existence more unlikely.

Finally, there could have been a shortcoming in the method—namely, the use of only one control year. Though there is a substantial yearly variation in the number of patients treated for overdose in the Regional Poisoning Treatment Centre, Edinburgh, in the designated control and experimental weeks over five years the totals are virtually identical. The same would probably be true nationally. Table I shows that in the 1985 experimental period there was a modest decline (−4%) in the total number of overdoses in women compared with the control period. This negative baseline figure would tend to increase the likelihood of finding a significant increase in the crucial 1986 comparison. The same possibility applies to people aged ≥45, in whom the baseline change was −18%. Table I shows very little evidence of a contrary effect—that is, an underestimation of the impact of the programme owing to an increase in the number of overdoses in the 1985 experimental period.

How, then, can we summarise the evidence of an imitation effect after Angie's overdose in the *EastEnders* soap opera? Within the limitations of the study design a conservative but fair conclusion must be "Case not proven." Though the portrayal by or reporting of suicide in the mass media has been shown to increase suicidal behaviour in the general population, clear evidence that the presentation of fictional parasuicide has a similar effect is lacking. In the debate about the coverage of suicidal behaviour in the newspapers and on film and television the possibility of a differential impact according to the type of stimulus event (suicide *v* parasuicide) should not be overlooked.

This study would not have been possible without the wholehearted cooperation of medical, nursing, and administrative staff in 63 hospitals throughout Britain. Dr Mallory Wober of the Independent Broadcasting Authority kindly supplied me with unpublished data on British television viewing habits. My colleagues in the unit made several helpful suggestions and criticisms of earlier drafts.

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A woman in her mid-60s has been taking conjugated oestrogens (Premarin) for 10 years. Will this have had any adverse effects on her ovaries?

In 1977 Hoover *et al* published a cohort study reporting an overall increase in incidence of ovarian cancer in postmenopausal women receiving exogenous oestrogens.¹ Further case-control studies failed to confirm the earlier observation,^{2,4} and therefore the current opinion is that exogenous oestrogens do not increase the overall incidence of ovarian cancer. The facts regarding a certain type of epithelial tumour—endometrioid cancer—which comprises about 10% of all cancers, are less clearly defined. In 1979 Cramer *et al* reported an increase in incidence of this cancer in the United States during the 1970s and suggested that exogenous oestrogens might be causally implicated.⁵ Three case control studies investigated this relation further.⁶⁻⁸ Cramer *et al* reported a higher (but not statistically significant) proportion of oestrogen users among women with this tumour than among women with other types of cancer⁶; La Vecchia *et al* and Weiss *et al* reported a borderline statistically significant increase in endometrioid cancer in oestrogen users.^{7,8} Because all increases in incidence⁶⁻⁸ were borderline it is not clear whether a causal relation exists or whether these results were due to chance.—MALCOLM I WHITEHEAD, senior lecturer/consultant gynaecologist, London.

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