To what extent do mass media health messages trigger patients' contacts with their GPs?

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ABSTRACT

Background

A recent Cochrane review concluded that mass media intervention may play an important role in influencing the use of health services, but little is known about the effects of unplanned untargeted information in the media.

Aim

To investigate the influence of messages in mass media about health issues on patients' contacts with their GPs.

Design of study

A case crossover design study comparing the frequency of receiving mass media health messages in a period before contact with a GP versus the frequency in matching control time periods for the same individuals. The outcome measure was the odds of patients having received health messages in the period before they contacted their GP, compared to the odds in the control periods.

Setting

The practices of 21 single-handed Danish GPs.

Method

Three hundred and twenty-two patients between 18 and 91 years of age were interviewed by telephone after an unscheduled contact with a GP, and 148 patients were interviewed again 3–6 months later. Health media messages were only recorded if patients could remember the topics.

Result

More than a third (35%) of the patients remembered receiving health media messages in the week before contact. No significant relationship (odds ratio = 1.2, 95% confidence interval = 0.5 to 2.6) between health messages and contact with GPs could be observed.

Conclusion

In the absence of health campaigns and drug advertisements, mass media health messages seldom directly trigger patients to consult their GPs.

Keywords

crossover design; health behaviour; mass media; primary health care.

INTRODUCTION

GPs often suspect that a mass media health message directly motivates their patients to contact them. In some countries that allow direct advertising of prescription drugs to consumers, there is concern that advertisements increase unnecessary healthcare use. A recent Cochrane review[1] concluded that there is evidence that mass media intervention as well as unplanned intensive media coverage of specific health-related topics actually do influence the use of health care, but points to the fact that information about key aspects is limited and the available clinical research of poor quality.

The few controlled studies that focus on the impact of unplanned media coverage of health-related issues deal with media attention that may have been as intense and focused as a coordinated health awareness campaign. The relationship between use of aspirin in children and Reye's syndrome,[2] the disclosure of Magic Johnson's HIV status,[3] Nancy Reagan's radical mastectomy[4] and the market release of Viagra®[5] are examples of such media coverage.

Whether unplanned everyday messages play a role as triggers of patients' contact with their GPs is not known, probably partly due to methodological difficulties. The methods used to evaluate effects have been before-and-after comparison[6-8] or more

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advanced methods such as time-series analyses.[9] In this study we use the case crossover method,[10] a relatively new epidemiological method of studying the transient effect of brief exposures on the occurrence of events that provides quantitative knowledge about triggers of healthcare use. The principle is that if precipitating factors exist, they should occur more frequently during a period immediately before the event onset than at similar periods that are more distant from the onset of the event.

The aim of this study is to quantify the background impact of mass media health messages received through television, radio, print or the internet on patients' contacts with their GPs, in the absence of a coordinated health awareness campaign and drug advertisements. In Denmark, direct-to-consumer advertisements of drugs are prohibited, and during the data collection period no organised health campaigns took place.

METHOD

Three hundred and twenty-two adult patients were included in the study and were interviewed by telephone after an unscheduled contact with one of 21 participating GPs on an inclusion day. We randomly selected 39 GPs among the total number of 75 GPs in single-handed practices (based on the final digit in their registration numbers) in the county of Frederiksborg, Denmark. The sample size was based on a pilot study (n = 50) with an estimated relevant odds ratio of 2. The 18 (46%) GPs who declined to participate were either too busy (n = 12) or uninterested in participation (n = 6). The participating GPs did not differ significantly from the non-participants with regard to age and sex distribution, number of years working as a GP, practice size and list composition. Data were recorded on 42 inclusion days: two for each GP. Six GPs did not wish to include patients on a Monday, because it was the busiest day, and the other GPs included one Monday and 1 day later in the week.

Patients over 18 years of age were eligible for the interview study if the contact was unscheduled and they were available for a telephone interview within 60 hours of the contact. Contacts included telephone consultations, bookings of appointments and a few walk-in visits. Contacts for the sole purpose of arranging a regular follow-up, to get a new prescription for an ongoing treatment, for certificate renewal, to obtain test results, and contacts from patients who were referred back to the GP from specialists or hospital departments, were not considered unscheduled. Among the 1058 adult patients who contacted the GPs on inclusion days, 607 patients did not meet the inclusion criteria: 49% had made contact to get a prescription for an ongoing treatment, 18% had arranged follow-ups, 15% had obtained test results, 8% had renewed certificates, 7% were unable to participate because of illness or disability, 2% were referred back to the GP from the secondary health sector, 1% did not speak Danish and one patient had no telephone. Among the 451 eligible patients, 322 (71%) were interviewed, as 19% could not be reached and 10% refused to participate.

The principal researcher was present in the clinics during opening hours on inclusion days and recorded all patient contacts (age, sex and reason for encounter).

Study design

The case crossover design[8] is a scientific method of finding out whether an event has been triggered by something unusual that has happened immediately before the event. The challenge is to quantify how unusual the trigger is, and this must be answered for all people in the study. The key feature of the design is that each case serves as his or her own control. The case crossover design is analogous to a case control design. In both designs each case has a matched control. In the traditional matched-pair case control study, the control is another person from the same time period. In the matched-pair case crossover design the control is the same person at a different time period. The design enabled us to test whether health messages in the media (the triggers) occurred more often immediately before the contact (in the case window) than during time periods more distant from the contact with the GP, either before or later (control windows). The case window is a chosen interval before an event in which trigger frequency is measured, a period when it is hypothesised to be higher than usual. We expected that patients, triggered by a media message to consult, were likely to contact their GPs as soon as possible, and therefore a case window of 24 hours would be expected to maximise the relative risk. This assumption is reasonable, because in Denmark GPs are required to be available for telephone calls from patients. The participating GPs (as do most Danish

How this fits in

A Cochrane review concludes that mass media campaigns may play an important role in influencing the use of health care, but no reliable information about the effects of untargeted media health messages is available. In the absence of organised health campaigns, media health messages do not appear to play an important role in the timing of patients' contacts with their GPs.

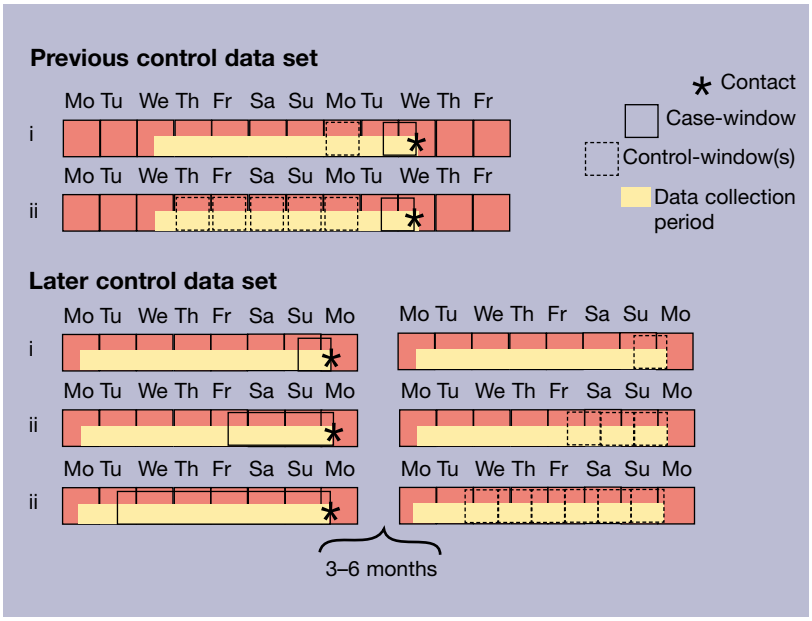

Figure 1. Two sets of control data.

GPs) started their working days by being available for telephone consultations for 1 hour, and later on staff kept lines open.

We included patients on 15 Mondays (157 of 449 [35%] contacting patients were included) and 9 Wednesdays (55 out of 210 [26%]), 9 Thursdays (53 out of 191 [28%]) and 9 Fridays (57 out of 208 [27%]). This gave us the possibility of using two different sets of control data: a previous control dataset, for which the 24-hour case window was compared to a control window in the week preceding the case window in all 322 interviewed patients; and the later-control dataset, for which the 24-, 72- and 144-hour case-window before a Monday contact was compared to a similar control-window of the same length on a later Monday (Figure 1). The material for this analysis comprised 148 patients, who were each interviewed twice: first concerning a contact on a Monday and again 3–6 months later on another Monday. The interval of 3–6 months was considered to be sufficiently long, so that the re-interviewed patients could not easily remember the answers they had given at the first interview.

Interviews

Patients were asked if they had received health messages from the following media: television, radio, printed media and the internet, during the days before the interviews. We asked about media exposure using the following two questions: 'When was the last time you received a media health message?' and; 'How many times did that happen during the past week and when?' The latest media health message and the time the message was received were recorded on a grid of 14 12-hour periods starting at noon or midnight, the last period including the time of contact. Messages were only recorded if patients could remember the topic of the message. If more than one media health message was remembered, data concerning each was recorded separately. The first questions in the interview covered reasons for encounter, symptoms or illnesses, chronic conditions, and a checklist of 16 common symptoms. For any symptom, illness or condition the perceived intensity of the problem was recorded for each of the 14 12-hour intervals mentioned above. Patients were asked whether they had tried to contact their GP unsuccessfully in the 3 days before the contact. Patients were unaware of the study design, but at the end of the interview they were asked whether the message was of personal relevance, had caused anxiety and if they felt their decision to contact had been influenced by the mass media health message. No health campaigns were conducted in the data collection period.

During telephone interviews the data were entered directly into a database designed to register the timing, type and intensity of exposures as well as the perceived intensity of health problems.

The study was part of a larger investigation of possible non-medical triggers of patient contacts to GPs; for example, advice from network members.[11,12]

Data analysis

The analysis estimated the relative risk of contacting GPs within 24 hours of exposure to a media message, estimated by the exposure odds ratio. This is the ratio of the odds of having received a media message in the 24-hour case window before the contact with the GP compared with one or more 24-hour control windows for each individual. Data was stratified by individual patient and analysed in the statistical program SAS, using the Mantel–Haenszel statistics for sparse data.[13-15]

In the case crossover design (as in the case control design) only patients who are exposed to the trigger in case or control windows (but not both) contribute information to the analysis. Patients exposed in the case or control windows or both appear in the tables.

We controlled for differences in symptom intensity by repeating analysis after exclusion of patients who reported aggravations of symptoms during either case or control period in the previous control dataset.

RESULTS

A third (35%) of the patients remembered receiving health media messages in the week before contact. No significant relationship (odds ratio = 1.2, 95% confidence interval [CI] = 0.5 to 2.6) between health

Table 1. Relative risk of contacting GPs within 24 hours of exposure to a media message — previous control dataset.[a]

Number of control windows	Symptom adjustment	Number of patients (%) with exposure during case window	Number of patients without exposure during case window	Number of patients (%) with exposure during control window	Number of patients without exposure during control windows	OR (95% CI)[b]
1[c]	No	36 (11)	76	36 (11)	76	1.0 (0.5 to 1.9)
1[c]	Yes	24 (7)	52	21 (6)	55	1.2 (0.5 to 2.6)
5[d]	No	36 (11)	76	32 (10)	80	1.5 (0.8 to 2.7)
5[d]	Yes	12 (4)	20	7 (2)	25	1.7 (0.7 to 4.1)

[a]This was estimated using the exposure odds ratio; this is the odds ratio of having received a media message in the 24-hour case window before the contact with the GP compared with either: the 24-hour control windows immediately before the case window, or with all five possible 24-hour control windows in the week before the contact (the previous control dataset). Subjects were all 322 patients in the interview study. Symptom adjustment restricts data to patients with comparable symptom intensity in the case and control windows. [b]These results are for the 112 exposed patients, out of 322 interviewed patients. The exposure odds ratios are Mantel–Haenszel statistics for sparse data.[12,13] [c]24-hour control windows immediately before the case window. [d]24-hour control windows in the week before the contact with the GP. OR = odds ratio.

messages and contact to GPs could be observed. This odds ratio was based on the previous control dataset and adjusted for symptoms, but the use of different or longer control periods and symptom adjustment only had small and insignificant effects on the odds ratio (Tables 1 and 2).

Among the patients who remembered a health media message, 64% stated that it had been of personal relevance, 20% felt that it had been worrying, and 6% had the feeling that it might have influenced their decision to consult. Only five patients had tried unsuccessfully to contact their GP in the 3 days before the contact.

DISCUSSION

Summary of main findings

These data suggest that everyday media health messages are not important as triggers of patients' contacts with their GPs. Accordingly, although many of the patients found the information of personal relevance, and often worrying, few reported that they judged the information to have had any influence on their own decisions to seek health care.

Limitations of this study

A case crossover study may be affected by recall bias or bias from systematic differences in symptom intensity in case and control windows. Moreover, data may be affected by wrong estimates of the average induction period from trigger to event. Recall bias could be introduced by the fact that control data had to be recalled for a slightly longer period of time than case data in the previous control dataset. Recall bias, however, would tend to over- and not underestimate the odds ratios. Furthermore, recall bias did not affect the later control dataset and very similar odds ratios were seen for the two datasets. Bias from fluctuations in symptoms was controlled for by exclusion of patients who reported changes in symptoms between case and control windows. This adjustment did not change the results significantly. Finally, selection of case and control periods may be biased if the exposure frequency and the inclusion probability vary significantly with the day of the week selected,[12] but this problem would not affect the later control dataset.

We aimed to investigate the quantitative effect of media messages on the timing of patients' contacts with GPs. Symptoms are an everyday part of peoples' lives and only a fraction of them are brought to medical attention. People often set time limits and engage in lay consultations before eventually

Table 2. Relative risk of contacting GPs within 24 hours of exposure to a media message — later-control dataset.[a]

Length of case and control windows	Number of control windows	Number of patients (%) with exposure during case windows	Number of patients without exposure during case windows	Number of patients (%) with exposure during control window	Number of patients without exposure during control windows	OR (95% CI)[b]
24 hours	1	13 (9)	60	9 (6)	64	1.4 (0.5 to 4.1)
72 hours	1	25 (17)	48	19 (13)	54	1.2 (0.6 to 3.2)
144 hours	1	47 (32)	26	41 (28)	32	1.3 (0.6 to 2.4)

[a]This was estimated using the exposure odds ratio; this is the odds ratio of having received a media message in the 24-, 72- or 144-hour hour case window before the contact with the GP compared with the 24-, 72- or 144-hour control window of the same weekly timing (the later-control dataset). Subjects were 148 patients contacting their GP on one of the 15 Monday inclusion days and successfully re-interviewed 3-6 months later. [b]These results are for the 73 exposed patients, out of 148 interviewed patients. The exposure odds ratios are Mantel–Haenszel statistics for sparse data.[12,13] OR = odds ratio.

consulting. Prolongation of the case and control windows in the later control dataset did not affect the results, so the messages had no detectable delayed or prolonged effects in this study.

Some effects of media health messages cannot be addressed in this study design; for example, patient stress, changed demand from informed patients, and the more general effect on the threshold of seeking general practice services. As the study relies on recalled messages, the effect of subliminal/unconscious perceptions cannot be estimated.

Comparison with existing literature

One Cochrane review supports the view that mass media may have an influence upon the way in which health services are used.[16] The authors stress, however, that the results of the review should be interpreted with some caution, given the methodological limitations of primary research in this area. Some of these limitations were believed to be inherent to the nature of the intervention itself, which limits the possibility of using experimental designs. Moreover, many of the observational studies identified suffered from major flaws and were likely to provide unreliable estimates of effect of mass media on the use of health services.

Most of the studies that have found the media to have an effect[1] looked at targeted interventions aimed to promote the use of specific health services or products; for example, direct-to-consumer advertisements of medicines. Also, unplanned coverage of health issues appeared to have effects if the topic got into the headlines or received prolonged attention. We have not been able to find quantitative studies that have assessed the effects of the diversified health messages of the normal media picture. There is, however, a growing qualitative literature on media coverage of health related topics and on how they convey scientific information to the public.

Implications for future research

This study is the first to explore the quantitative effect of media health messages on the timing of patients' contact with their GPs. We believe that the case crossover design may be useful for future studies of the effects of possible triggers such as mass media messages on the use of health services.

The effects of health messages in the media on important issues such as patient stress, attitudes to healthcare seeking and relations between doctors and patients are not well understood and call for qualitative investigation.

Table 3. Demographic information and types of contacts.

	Patients exposed to media messages (*n* = 112)	Interviewed patients (*n* = 322)	Includable patients (*n* = 451)	Patients who contacted their GP (*n* = 1058)
Male sex (%)	34 (30)	106 (33)	161 (35)	375 (35)
Age in years (mean)	18–88 (50)	18–91 (51)	18–91 (51)	18–100 (55)
Type of contacts				
Walk-in visits (%)	47 (42)	133 (41)	157 (35)	189 (18)
GP telephone consultations (%)	19 (17)	58 (18)	79 (18)	218 (21)
Booking of consultations (%)	36 (32)	113 (35)	161 (36)	349 (33)
Staff (not booking) (%)	10 (9)	38 (12)	54 (12)	302 (28)
Reasons for encounters[a]				
Acute infections (%)	37 (33)	100 (31)		
Musculoskeletal (%)	19 (17)	61 (19)		
General health (%)	14 (13)	33 (10)		
Reproductive health (%)	10 (9)	26 (8)		
Dermatology (%)	7 (6)	25 (8)		
Respiratory (%)	7 (6)	17 (5)		
Gastrointestinal (%)	6 (5)	11 (4)		
Cardiovascular (%)	5 (4)	16 (5)		
Psychological/social (%)	4 (4)	18 (6)		
Eye/ear (%)	2 (2)	9 (3)		
Headache (%)	1 (1)	6 (2)		

[a]*Reasons for encounter are known for interviewed patients only.*

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Ethics committee and reference number

The study was approved by the Regional Scientific Ethics Committee for the County of Frederiksborg (97/129 PMC)

Competing interests

None

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