

Longer booking intervals in general practice: effects on doctors' stress and arousal

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SUMMARY. A controlled trial was carried out to determine whether longer booking intervals at surgeries affected general practitioners' self-assessed levels of stress and arousal. Sixteen general practitioners from 10 practices took part. Surgery sessions with patients booked at 10 minute intervals (experimental sessions) were compared with the doctors' usual booking intervals of between 7.5 and 5.0 minutes (control sessions). Stress and arousal were assessed by the general practitioner before and after each surgery session using a mood adjective check list. The study included 109 experimental and 184 control sessions. The median consultation length increased from six minutes in the control sessions to seven minutes in the experimental sessions. At the end of the experimental sessions, stress scores were lower, and arousal scores higher than at the end of the control sessions ($P < 0.001$). There were no significant differences between experimental and control sessions in stress or arousal at the start of the sessions. Favourable mood changes were seen more consistently in the experimental sessions than control sessions, with less than a quarter of doctors showing increased stress or decreased arousal after sessions relative to before. It is concluded that longer booking intervals are of psychological advantage to general practitioners.

Introduction

MORTALITY and morbidity data for general practitioners reveal high levels of stress related complaints.¹⁻³ As well as being damaging to the doctor, stress has been suggested as one explanation of the variable standards in general practice.⁴ Studies of stress in general practice have found that organizational aspects of the job, rather than patient care itself are the major stressors.^{5,6} Of these, lack of time is a major contributor. Mechanic found that among urban general practitioners shortage of time was felt to be the most stressful aspect of the job.⁷ A study of stress in trainees found that time pressure was reported because of both lack of time in the consultation itself and also because of late running of surgery sessions.⁸ Time management has been suggested by several authors as a method of reducing stress.^{5,6,9} In a pilot study of stress in general practice, doctors with the fastest booking rates felt under the most pressure.¹⁰ There are problems, however, in interpreting such observational studies as several confounding variables (for example, the personality of the doctor) may be associated with both stress and choice of method of working. By controlling

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for such confounding factors, experimental studies are able to explore this association further. One such study failed to find any association between stress and changes in consultation length, although its power to detect such changes was small.¹¹

General practitioners' stress levels have been assessed in a variety of ways, including physiological measurements, self perceived pressure scores and mood adjective checklists. King and colleagues showed that their checklist could differentiate between different groups of people subjected to different and potentially stressful situations, and that two reactions — stress and arousal — could be regarded as independent.¹² Elevated arousal is associated with a coping response, while elevated stress indicates the presence of fears about coping. Mackay and colleagues described the stress factor as 'an integral response to the perceived favourability of the external environment', and the arousal factor as 'a representation of ongoing autonomic and somatic activity'.¹³ A relevant experiment by King involved subjects in a visual search of photographic slides for concealed figures. Some subjects were required to perform the task at a faster rate. This was found to increase their arousal but did not affect their stress. King concluded from this and other experiments that the mood adjective checklist was appropriate for the measurement of environmentally induced changes in stress and arousal.¹²

This report examines whether doctors' stress and arousal states differ when fewer than normal consultations are booked per hour. It is part of a larger study of the results of increased booking length on the content of the consultation and patient satisfaction.

Methods

Participants were recruited from a postal survey of Nottinghamshire general practitioners conducted in 1987, to which 416 (67%) responded. Criteria for entry to the study were a current booking rate of eight or more patients per hour, a desire to change to longer consultations, and future plans to increase appointment length. Forty eight doctors would have been eligible to take part, and of the first 37 invited to take part 10 (27%) agreed. After discussion with these practices, a further six partners were found to fulfil the entry criteria and volunteered to take part. The total sample of 16 general practitioners included two practices in which three partners took part, two practices in which two doctors took part, and six practices in which one doctor took part. Thirteen of the general practitioners were men and three women. The median age was 36.5 years (range 27–56 years). The study included an interview with participating doctors before and after the experiment to explore their reasons for wanting longer appointments, and to discover whether these had been realized in practice.

The design of the study was that of a controlled trial of experimental surgeries in which the 16 participating general practitioners booked patients at longer intervals. During experimental surgery sessions, appointments were booked at 10 minute intervals; in the control sessions patients were booked at the usual rate for that doctor's practice. Control and experimental sessions were timetabled to take place on the same day at the same time each week for each participant. The first set of control surgeries took place each week in the period before the doctor entered the experimental phase. During the experimental phase of the

study experimental sessions took place once a fortnight and the second set of control surgeries took place during the same period on alternate weeks. Surgeries taking place on the designated days were observed until about 100 consultations had been obtained for each of the three types of session from each patient. Each practice's involvement with the study was for a period of approximately six months. Data were collected during 1987 and 1988.

Consultation length was recorded by observing the patients' entry and exit from the consulting room. The time that each consultation started was noted and compared with the time of the appointment. All timings were made to the nearest minute. These measurements were not possible when more than one patient entered the consulting room at the same time.

Before and after every surgery session each doctor was presented with a set of 26 cards, each with one adjective printed on it which expressed a mood, for example 'tired' (see Appendix 1). Each card was then placed into one of four slots in a posting box, according to the category which best described the doctor's feelings at that moment. These slots were marked, 'I definitely feel', 'I think I feel', 'I don't think I feel' and 'I definitely don't feel'. Responses to each adjective were coded on a scale of 1 to 4, the direction of the scale depending on whether the adjective was positively or negatively associated with the mood scale. Total stress and arousal scores were calculated by the sum of scores for each contributing adjective. As 17 adjectives contributed to the stress score, the maximum score was 68, minimum 17. For arousal these values were 32 and eight respectively.

Non-parametric tests were used to compare stress and arousal scores between the three types of surgery. If a difference was shown on Kruskal Wallis analysis of variance test, each group

was compared with the other two using the Mann Whitney U test. Raw scores at the beginning and end of sessions, and changes in scores were analysed in this way. The Wilcoxon matched pairs signed rank test was used to compare changes in score during each surgery session. As neither waiting time nor consultation length followed a normal distribution, non-parametric tests were also used in these comparisons.

Results

The study included 299 surgery sessions, comprising 112 experimental sessions, and 91 and 96 first and second control sessions respectively. In the experimental sessions, all appointment slots were 10 minutes. In the control sessions the doctors followed their usual practice; four doctors booked at eight patients per hour, one at nine per hour, 10 at 10 patients per hour and one at 12 per hour. A stress score was calculated in 293 (98%) sessions and an arousal score in 290 (97%). The mean consultation length was 7.04 minutes and 7.16 minutes in the first and second control sessions respectively and this increased to 8.25 minutes in the experimental sessions. The median consultation lengths (first and third quartiles) increased significantly from 6.0 minutes (4.0,9.0) and 6.0 minutes (4.0,8.0) to 7.0 minutes (5.0,10.0) in the experimental sessions ($P<0.001$, Mann Whitney U test). Patient waiting time was far less in the experimental sessions: the median wait was 17.0 and 15.0 minutes in the first and second control sessions compared with 5.0 minutes in the experimental sessions ($P<0.001$). The lower quantiles for wait were 7.0, 7.0 and 0.0 minutes respectively.

Median stress and arousal scores for each experimental group before and after the surgery sessions were calculated (Figure 1).

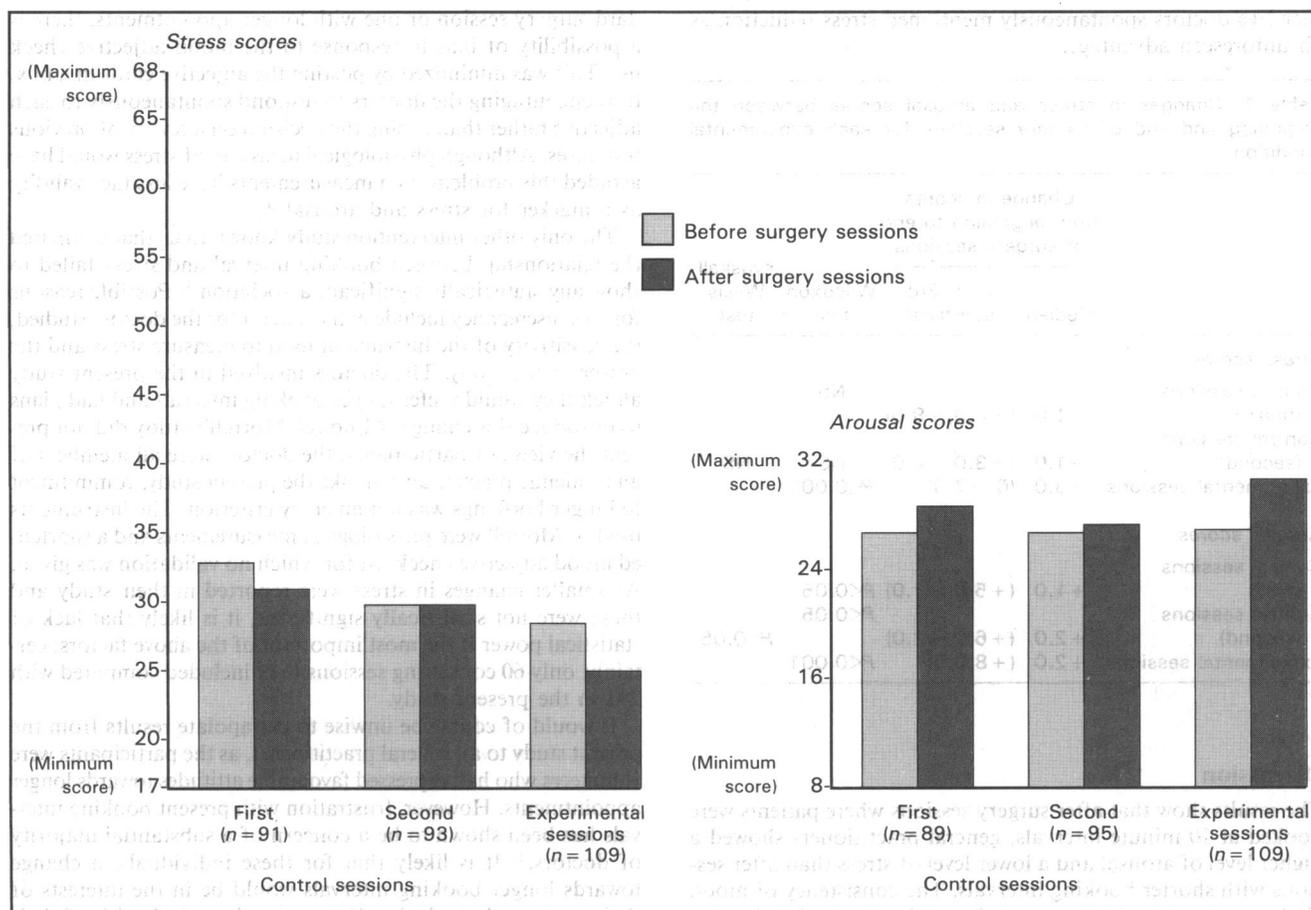


Figure 1. Median stress and arousal scores before and after the surgery sessions for each experimental condition (n = number of sessions).

Stress and arousal scores before the surgeries did not differ significantly (Kruskall Wallis test). Stress levels after the surgery sessions were significantly lower in the experimental sessions than either control session ($P < 0.01$, Mann Whitney U test) and there was no difference in stress score between the two controls after the surgery sessions. Similarly, the median arousal score at the end of the sessions was significantly higher in the experimental sessions ($P < 0.01$) with no difference between the control sessions.

For each individual surgery session the change in doctor stress and arousal was calculated. Table 1 shows the median and interquartile ranges for these changes. The Wilcoxon test was used to detect whether mood states were significantly different at the end compared with the beginning of the sessions. In the control sessions there were no statistically significant reductions in stress, but in the experimental sessions this change was statistically significant. Arousal increased significantly during all types of surgery but reached a higher level of statistical significance in the experimental sessions. Mood changes in the experimental sessions were more consistent than in control sessions, with less than a quarter of sessions resulting in increased stress or decreased arousal after sessions relative to before. The magnitude of mood changes was compared using Kruskal Wallis analysis of variance followed by Mann Whitney tests if the former showed significance. For stress this did not reach statistical significance but for arousal was greater in the experimental sessions than the control sessions ($P < 0.01$, Mann Whitney U test). There was no significant difference in increase in arousal between the two control groups.

Seven doctors gave reduction in stress as one of the reasons they sought longer consultations. All of these felt they had been less stressed during the experimental phase of the study. A further five doctors spontaneously mentioned stress reduction as an unforeseen advantage.

Table 1. Changes in stress and arousal scores between the beginning and end of surgery sessions for each experimental condition.

	Change in scores from beginning to end of surgery sessions		Wilcoxon test	Kruskall Wallis test
	Median	(1st, 3rd quartiles)		
Stress scores				
Control sessions (first)	-1.0	(+4.0, -8.0)	NS	
Control sessions (second)	-1.0	(+3.0, -6.0)	NS	NS
Experimental sessions	-3.0	(0, -7.0)	$P < 0.001$	
Arousal scores				
Control sessions (first)	+1.0	(+5.0, -1.0)	$P < 0.05$	
Control sessions (second)	+2.0	(+6.0, -2.0)	$P < 0.05$	$P < 0.05$
Experimental sessions	+2.0	(+8.0, 0)	$P < 0.001$	

Discussion

The results show that after surgery sessions where patients were booked at 10 minute intervals, general practitioners showed a higher level of arousal and a lower level of stress than after sessions with shorter booking intervals. The consistency of mood change was greater in these experimental sessions than in control sessions, with less than a quarter of sessions resulting in

unfavourable changes in stress and arousal. This suggests that longer booking intervals for appointments were psychologically beneficial to the participating doctors.

There are two possible explanations for this finding. The first is that running late is a major stressor to general practitioners. The median delay in seeing patients was reduced in the experimental session from 15-17 minutes to five minutes. Many general practitioners book more patients than they actually can see in the time, and so the waiting time of patients increases exponentially throughout a surgery session.¹⁴ The solution to this problem is improved time management.^{5,6} One such method would be for general practitioners to calculate their average consultation length and adjust their appointments accordingly. Another approach would be to ask patients to book an appointment of the length they feel is required; other studies have shown such predictions to be accurate.^{15,16}

The second explanation is that it is the brevity of the average consultation that doctors find to be stressful. Although the median consultation length of six minutes increased by only one minute in the experimental sessions to seven minutes, this represents a 17% increase and could be enough to allow the doctor to feel less stressed and hurried. Other beneficial outcomes have been noted for longer consultations.^{11,17,18} If brevity of the consultation is the problem, time management alone is an inadequate response; longer consultations are needed. This has implications for the size of list for which a doctor might reasonably be expected to care.¹⁹

One of the entry criteria for the study was that the doctors felt that longer appointments would be beneficial. As participants were aware of whether they were taking part in a standard surgery session or one with longer appointments, there is a possibility of bias in response to the mood adjective check list. This was minimized by posting the adjective cards in a box, thus encouraging the doctors to respond spontaneously to each adjective rather than basing the decision on a review of previous responses. Although physiological measures of stress would have avoided this problem such measurements have less face validity as a marker for stress and arousal.²⁰

The only other intervention study known to us that compared the relationship between booking interval and stress failed to show any statistically significant association.¹¹ Possible reasons for this discrepancy include entry criteria for the doctors studied, the sensitivity of the instrument used to measure stress and the power of the study. The doctors involved in the present study all felt they would prefer longer booking intervals and had plans to introduce this change. Although Morrell's study did not present the views of participants, the doctors were all members of an academic practice and, unlike the present study, commitment to longer bookings was not an entry criterion. The instruments used by Morrell were physiological measurements and a shortened mood adjective check list for which no validation was given. As smaller changes in stress were reported in their study and these were not statistically significant, it is likely that lack of statistical power is the most important of the above factors; certainly, only 60 consulting sessions were included compared with 293 in the present study.

It would of course be unwise to extrapolate results from the present study to all general practitioners, as the participants were volunteers who had expressed favourable attitudes towards longer appointments. However, frustration with present booking intervals has been shown to be a concern of a substantial majority of doctors.²¹ It is likely that for these individuals, a change towards longer booking intervals would be in the interests of their own psychological welfare, as well as the health of their patients.

Appendix 1. Words used in the vocabulary scale.

<i>Contributors to stress score</i>	<i>Contributors to arousal score</i>
UNEASY	AT REST
NERVOUS	ENERGETIC
FEARFUL	ACTIVE
TENSE	LIVELY
WORRIED	SLUGGISH
BOTHERED	SLEEPY
DISTRESSED	DROWSY
UPTIGHT	TIRED
JITTERY	
RELAXED	
RESTFUL	
PEACEFUL	
CONTENTED	
CALM	
CHEERFUL	
PLEASANT	
COMFORTABLE	

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