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The moon and its relationship to oral and maxillofacial emergencies

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SUMMARY. ***Objective*: To study the relationship between the full moon and oral and maxillofacial emergencies.**

***Study design*: Retrospective analysis of 2416 referrals to the Department of Oral and Maxillofacial Surgery, St. Bartholomews and The Royal London Hospital, London, over a 16-month period (17 lunar months). Frequency distributions were used to assess emergency workload during the week of the full moon.**

***Results*: There was a rise in referrals in the latter part of the 7-day period surrounding the full moon. There was a persistent reduction in emergency workload in the 3-day period leading up to the full moon. The results approach but do not reach significance.**

***Conclusions*: The effect of the moon on oral and maxillofacial referrals cannot be proven.**

INTRODUCTION

Despite the moon landings and advances in astronomy, the moon remains as mysterious as ever. Its known gravitational effect on the tides continues to lead to speculation about its possible effect on the human brain, the water content of which exceeds 50–60%.

It is a commonly held belief that the moon exerts an influence on the human psyche that can lead to aggression and violence. A number of studies have looked at a possible relationship between phases of the moon and aggressive behaviour,[1–3] menstruation,[4] delivery,[5] injuries,[6–8] suicides,[9–15] homicides,[16] psychiatric disturbance,[17–20] clinical depression,[21] homeopathy[22] and emergency admissions.[23] The results are variable, with only a few finding a significant link.[1,4,6,9,15]

A good proportion of oral and maxillofacial surgery emergency workload arises as a result of interpersonal violence. A literature search did not reveal any studies looking at a possible relationship between phases of the moon and emergency oral and maxillofacial surgery workload. The purpose of our study was to find out whether such a relationship exists.

METHODS

This is a retrospective study of 2416 emergency cases seen by the Oral and Maxillofacial unit at The Royal London Hospital over a 16-month period. All the daily referrals to the Oral and Maxillofacial unit are recorded on the departmental trauma database, which was the source of the data used in this study.

Frequency distributions were calculated to show the number of cases referred on each day. The mean number of maxillofacial emergencies seen week-to-week was calculated and compared with that during the week surrounding the full moon. The full moon week was considered as a 7-day period including 3 days before and 3 days after the full moon. Throughout the 16-month period the day of the full moon rotated and we were able to exclude any effect of the weekend or 'pay day'. Significance was assessed by looking at the variance and standard deviation of the mean.

RESULTS

The data were originally recorded on a Microsoft Access database. This was sorted into date order and transferred to a flat text tabular file for analysis. The daily accumulation was entered into a table as a series of populations. The general populations were represented statistically by the overall mean and variance of the daily count. Individual, supposedly independent, statistical populations were then taken for phase days of the full moon week. Both the general population and the individual populations of the full moon week are shown in Table 1. If the difference of the means is compared with the standard error on a normal curve it gives the chance of the differences occurring as a

Table 1 Comparison of full moon week daily mean with other weeks

Day	Mean	Variance	Mean variance	SEM	DM	DM/SEM
All	4.97	8.65	–	–	–	–
Day 1	3.94	7.11	0.4619	0.6796	1.01	1.5
Day 2	4.12	6.93	0.4507	0.6713	0.83	1.25
Day 3	4.59	6.93	0.4507	0.6713	0.36	0.53
Day 4	5.18	6.03	0.3944	0.6280	0.23	0.57
Day 5	4.71	8.33	0.5382	0.7336	0.24	0.33
Day 6	5.71	8.09	0.5232	0.7233	0.76	1.05
Day 7	4.82	4.03	0.2694	0.5191	0.13	0.25

Figures used for the weekly control chart to examine the changes in the data. DM = difference of mean, mean = 4.97, mean limits 2.95–6.90, range limits 3.31–11.95, day 4 = full moon day.

random fluctuation. If the chance of a difference occurring by random is less than 5%, we can arbitrarily define the result as significant.

Analysis of the variance of the means showed that attention can be drawn to the mean count for 2 and 3 days before and 2 days after the full moon (Table 1). These values show a difference of −20, 17 and +15% from the overall mean, respectively. Comparison of the difference of the mean value on these days with the SEM indicate that the results could have occurred by chance 8, 10 and 16% of the time, respectively.

Although the differences look large, these values are all above our assumption of 5% for significance.

The case for the variation on any of these days cannot, therefore, be confirmed using the data we have analysed.

Our data show a consistent dip in emergency workload just before the date of the full moon. This has not been described before, to our knowledge.

DISCUSSION

Despite the moon's mythical ability to turn people insane, kindle romance and raise the undead, there is no clear evidence at this stage to confirm that oral and maxillofacial emergencies occur as a result of these powers of lunacy.

Although the changes seen each day in the full moon week look large, these results are not significant.

Appendix A

Key messages box

1. There was a pattern between emergency referrals and the week of the full moon.
2. There was a general increase in workload in the 3 days following the full moon.
3. There was a reduction in referrals in 3 days before the full moon.
4. The results approach but do not reach significance.

This week in the BJOMS

Does the full moon have any effect on emergency workload? Analysis appears to show a link but not a significant one.

The commonly held lay belief that a full moon leads to changes in the human psyche has been the subject of a few research papers, which have given conflicting results.

This paper looks specifically at the relationship between emergency oral and maxillofacial referrals and the week of the full moon.

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