

LUNAR PHASE AND PSYCHIATRIC ILLNESS IN GOA

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ABSTRACT

There has been considerable research on the influence of the lunar cycle on mental illness with conflicting findings. The objective of this study was to determine the relationship between full moon (FM), new moon (NM), and other moon (OM) days and the frequency of specific psychiatric disorders in patients seen at a tertiary psychiatric hospital in Goa and to examine relationships with eclipses. Analysis of all new patients in two calendar years (1997 & 1993) was carried out. Diagnoses of interest were : Non affective psychoses; depression; and mania. The numbers of new patients seen at the OPD of the Institute of Psychiatry & Human Behaviour, Goa, with these diagnoses were compared between FM, NM and OM days. Numbers of patients with these diagnoses on eclipse days (lunar/solar) were also examined. A significant trend was observed for greater numbers of patients with non-affective psychoses on FM days, but no pattern was observed for mania or depression. The excess of non-affective psychoses was more marked on days of a visible lunar eclipse. A relationship between FM and non-affective psychoses has been demonstrated. Its implications for further research and the potential mechanism to explain these findings are discussed.

Key Words : lunar, eclipse, psychoses, mental illness

The belief in the effect of the lunar cycle on human and animal behaviour has been present for centuries and is immortalized in the word "lunatic", once used to describe the mentally ill. A review of the literature on the association of psychiatric illness and the lunar cycle reveals a diverse and conflicting set of findings. Associations have been reported between the lunar cycle and parasuicide case admitted to hospitals, with the peaks occurring at full moon and new moon (Rogers et al., 1991). Similar associations have been demonstrated for homicides (Lieber & Sherin, 1972). De Castro & Pearcey (1995) demonstrate an 8% increase in meal size and a 26% decrease in alcohol intake at the time of the full moon relative to the new moon, thus suggesting that there is a true internal lunar rhythm which influences nutrient

intakes of normal humans in their natural environment. A significant lunar periodicity has been observed for the number of accidents, the highest number being two days before full moon (Alonso, 1993). The mean number of misbehaviours in a population of developmentally delayed institutionalised women on the day of full moon was significantly higher than the mean number on any other day of the lunar period (Hicks-Caskey & Potter, 1991). In contrast, many authors (e.g. Beuer & Hornic, 1968; Lilienfeld, 1969; Laverty et al., 1992; Vijaylakshmi & Ramakrishna, 1992) failed to demonstrate any relationship between lunar phase and mental illness. All these authors examined the daily total number of cases at the psychiatric emergency room without classifying them into any diagnostic group. Wilkinson et

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al. (1997) did not find an influence of the moon of the frequency of consultations for anxiety or depression in general practice.

The objective of this study was to determine the relationship between full moon (FM), new moon (NM), and other moon (OM) days and the frequency of specific psychiatric disorders in patients seen at a tertiary psychiatric hospital in Goa and to examine relationships with lunar and solar eclipses.

MATERIAL AND METHOD

Design : Prospective Case - Series from January 1st, 1997 for 12 months. Upon findings a trend for greater number of admissions for non-affective psychoses during this prospective series, a retrospective Case-Note survey for 1993 was carried out to confirm this association.

All new attenders at the outpatient clinic of the Institute of Psychiatry & Human Behaviour during two calendar years, viz., 1993 & 1997 formed sample of the present study.

Data Collected from Case Notes were date of consultation, gender & psychiatric diagnoses according to ICD-10 (WHO, 1992).

For lunar cycle dates, the lunar phase and eclipses were plotted by using standard astro-calendars (Astro-Research Bureau, 1993 & 1997).

The definitions related to the topic are :

Apogee : farthest distance of the moon from the earth,

Perigee : closest distance of the moon to the earth,

Aphelion : farthest distance of the earth from the sun,

Perihelion : closet distance of the earth to the sun.

Analysis : The mean number of patients for 13 diagnostic group, viz., Non - affective psychoses (P), Depression (D) and Mania (M) were compared for the following types of days of the

lunar cycle : Full Moon (FM) days; New Moon (NM), days, Other Moon (OM) days; solar eclipses ; and lunar eclipses (visible or non-visible). One way analysis of variance was used to compare the mean number of subjects for each diagnosis for the three groups of OM, NM and FM. Since most studies which had found significant associations had identified FM days as being particularly important, t-tests were conducted comparing mean numbers of patients for the three diagnoses between FM and OM+NM days.

RESULTS

In the prospective case-series for 1997, a total of 2281 new cases recorded in the IPHB outpatients department, of these 18% had specific psychiatric disorders of interest in this study (0.9% mania, 6.5% depression, 10.8% non-affective psychotic episode). In the retrospective case-note survey for 1993, a total of 2346 new cases were recorded; of these 19% had specific psychiatric disorders of interest in this study (1.8% mania; 6.6% depression, 10.7% non-affective psychotic episode).

Relationship between diagnoses and FM, NM and OM days (Table 1) : No significant associations were found between the diagnoses of mania and depression and the lunar cycle in either 1993 or 1997. However, a trend was discovered for greater number of diagnoses of non-affective psychotic disorders in FM and NM days as compared to OM days in 1997. This trend was found to be even stronger in 1993 where the relationship was statistically significant.

Data were further analysed comparing FM days with all other days (i.e. OM and NM combined). Again, while there was no difference in mean numbers of cases for depression and mania, more than twice the number of cases of non-affective psychoses were recorded on FM days. This excess was highly significant for 1993 (Table 2).

Relationship between diagnoses and eclipses : A total of 8 eclipses were recorded

TABLE 1
COMPARISON OF MEAN NUMBERS OF SUBJECTS WITH NON AFFECTIVE PSYCHOSIS,
DEPRESSION OR MANIA ON FM, NM, AND OM DAYS IN 1993 & 1997

		Mania			Depression			Non-affective psychoses		
		OM	NM	FM	OM	NM	FM	OM	NM	FM
1993	N	36	3	3	148	5	3	229	5	18
	Mean	0.1	0.25	0.23	0.4	0.4	0.2	0.6	0.4	1.3
	95% CI	0.06-	0.14-	0.04-	0.36-	0.008-	0.03-	0.58-	0.08-	0.8-
		0.14	0.64	0.49	0.5	0.8	0.4	0.75	0.8	1.96
		F=1.6; p=0.19			F=0.09; p=0.49			F=5.8; p=0.003		
1997	N	19	1	0	137	4	7	227	8	12
	Mean	0.05	0.07	0.00	0.3	0.3	0.58	0.6	0.6	1
	95% CI	0.02-	0.09-	0.0	0.29	0.07-	0.01-	0.5-	0.1-	1.2-
		0.07	0.2		0.44	0.68	1.15	0.69	1.07	1.7
		F=0.4; p=0.66			F=0.6; p=0.5			F=1.2; p=0.2		

(OM = Other moon days ; FM = Full moon days ; NM= New moon days; N=total number of subjects; 95% CI=(95% confidence intervals of mean)

TABLE 2
COMPARISON OF MEANS OF DIAGNOSES OF PATIENTS SEEN ON FM VERSUS
OTHER DAYS FOR NON-AFFECTIVE PSYCHOSES, MANIA AND DEPRESSION

	Non-affective psychoses	Mania	Depression
1993			
Mean of FM versus NM+OM	1.3 vs 0.66	0.2 vs 0.11	0.8 vs 0.5
t-test, p value	T=3.2, p=0.001	T=1.18, p=0.2	T=1.2, p=0.2
1997			
Mean of FM versus NM+OM	1.0 vs 0.6	0.0 vs 0.05	0.58 vs 0.36
t-test, p value	T=1.6, p=0.1	T=0.8, p=0.4	T=1.1, p=0.2

(FM = Full moon days ; NM= New moon days; OM =Other moon)

globally during the study years as shown in the table 3.

The key association between eclipses and admission were : there was no relationship between solar eclipses and diagnostic groups. However, for lunar eclipses visible in Goa, an average of 2 new cases of non-affective psychoses were recorded which is nearly four times

the average figure for other days (0.6). Due to small numbers, it was not feasible to estimate the statistical significance of this difference. No such association was noted for lunar eclipses which were not visible in Goa. There were no associations noted for other diagnoses and lunar eclipses.

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TABLE 3
ECLIPSES IN 1993 & 1997

1993				
Type	Partial solar	Total lunar	Partial solar	Total lunar
Date	May 21	June 4	Nov. 13	Nov. 29
Whether visible in Goa	No	Yes	No	No
1997				
Type	Partial solar	Partial lunar	Partial solar	Total lunar
Date	March 9	March 24	Sept. 1-2	Sept. 16
Whether visible in Goa	No	No	No	Yes

DISCUSSION

The objective of the study described in this paper was to examine the relationship between mean numbers of new cases with the diagnoses of mania, depression or non-affective psychoses and the lunar cycle in a tertiary psychiatric hospital population in Goa. The main finding of this study is the association of non-affective psychoses with full moon days. This excess was even more significant for the two visible lunar eclipse days.

We believe that our findings suggest that while the total number of admissions may not be influenced by the lunar phase, those of the specific diagnostic group of non affective psychoses may be uniquely influenced by the full moon and lunar eclipses. Indeed, in our data sample, there was no significant association between total daily attendances or admission rates with the lunar cycle. Advocates of the lunar hypothesis have attempted to link phases of moon to a number of environmental factors, in principal, gravity and charged particles & electromagnetic forces (Rotten & Kelly, 1985). The moon, via the effects of its gravitational forces on the human organism, causes cyclic changes in water flow among the fluid compartments of the body, as well as changes in total body water resulting in what might be termed "biological tides". These changes, together with associated electrolyte and hormonal shifts, may set the

stage for differential thresholds of neural constitutionally predisposed individuals, to more or less severe emotional disturbance (Lieber & Sherin, 1972). De Castro & Pearcey (1995) state that the lunar effect on gravity is strongest when sun, earth and moon are in alignment during the new and full moon phases and weakest when the sun, earth and moon form a right triangle. This study found that the rate of non-affective psychoses was even greater on lunar eclipse days as compared to other full moon days; this poses the question of the reason for this finding. On a examination of the lunar phases, it was found that both the lunar eclipses had occurred on perigees, i.e. days when the moon is closest to the earth. Being closer, it is possible that the gravitational force induced must be greater. But when the perigee coincided with the new moon, a similar increase was not found, making the possibility of a gravitational pull effect unlikely. The literature mentions that charged particles emanating from the sun could be one of causes of behavioural changes (Kay, 1994) and the pull on these charged particles is more when the moon and earth are in line with the sun. If the sun, via the charged particles, is the cause, then when earth is closer to the sun there should be more charged particles in the atmosphere and a higher incidence of psychotic cases combining both the years (1997 and 1993) and averaging, the data of a one month period,

following the earth's perihelion (closest distance to sun) showed a greater number of cases of psychoses ($n=23.5$), than the one month period that followed earth's aphelion (Farthest distance from sun) ($n=14.5$). Raps & Stoupe (1992) reported significant correlations between monthly numbers of first psychiatric admissions with positive solar radio flux and with sudden magnetic disturbances of the ionosphere. The main cause of geomagnetic storms is a sudden increase in charged particles emanating from solar flares. The sun spot activity goes through cycles of 11.1 years. Thus the amount of charged particles in the environment also follows a cyclic rhythm. The pull on these charged particles towards the earth will be maximum when the earth and the moon are in alignment during the new and full moon as compared to the other days of the moon. However the new moon must be obstructing a sufficient amount of these charged particles from reaching the earth. This could be the reason for the lesser degree significance of data on a new moon as compared to that on full moon. And the sun via its charged particles produces changes in geomagnetic flux which in turn is the cause of the higher incidence of psychotic illness.

The Key limitations of this study are that it combines two different types of data collection, i.e. prospective and retrospective (based on history sheets, which may have introduced a bias). Further, given the nature of the lunar calendar, two years may be limited a period to obtain longitudinal trends or replicate findings over different years.

Some authors have advocated that research into possible links between lunar phases and human behaviour is not worth pursuing (Rotten and Kelly, 1985). This view is encouraged by unsubstantiated assertion and speculation about the cause of any effect. We consider that further investigation may be justified and that disregarding this field of enquiry because it is replete with myths is an understandable but inappropriate scientific response. We would suggest replication of similar study using a much

larger data of atleast of two sunspot activity cycles, to confirm the relationship between non-affective psychosis & full moon and the potential mechanisms by looking in more detail at psychiatric disorders at the time of apogees, perigees, aphelions and perihelions.

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