



A PILOT STUDY OF THE ROLE OF INTERCESSORY PRAYER (MAHA MRITYUNJAYA CHANTS) IN DETERMINING THE OUTCOME AFTER SEVERE TRAUMATIC BRAIN INJURY

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ABSTRACT

Background: Intercessory prayer in the form of Mahamrityunjaya Mantra is widely believed to enhance healing and recoveries from severe life threatening illness like brain injury. **Aim:** Study aimed to evaluate the effect of intercessory prayer in determining the outcome after severe traumatic brain injury (STBI). **Methods:** Forty intensive care (ICU) admitted patients with severe traumatic brain injury were recruited and randomized in control and prayer group. Prayer group received 9 days recitation of Vedic Maha Mrityunjaya chants with standard treatment and control group received standard treatment only. The parameters mainly examined were Glasgow Coma Scale (GCS), Functional Independence Measure (FIM), Extended Glasgow outcome Scale (GOS-E) and cytokines levels (Interleukin-6, IL-6, Tumour necrosis factor- α , Interferon-gamma γ , soluble Interleukin-2 (IL-2) receptor) along with age, gender, and mode of head injury. **Results:** The results demonstrated that there are improvements in the level of GCS, GOSE and FIM scores after nine days (post prayer), at discharge, at 6th months and at 12th months in the prayer group in comparison to the control group, but not statistically significant except GCS score (P value-0.02). Reduction in the cytokines were little higher with elevation in TNF- α (P=0.02) in the Prayer group but not statistical significant. **Conclusions:** Patients who received intercessory prayer, itself had no statistically significant effect in recovery after STBI as compared to control group. The role of intercessory prayer needs further studies in larger groups with more parameters and longer follow ups.

KEYWORDS : Severe Traumatic Brain Injury, Maha Mrityunjaya Chants, Cytokines, Extended Glasgow Coma Score, Functional Independence Measure.

INTRODUCTION

Even with evolving better understanding, technologies and evidence based guidelines for the management of severe traumatic brain injury, the mortality and morbidity is miserably high. [1]. There's high amount of primary damage with occasional secondary damage to brain in severe traumatic brain injury which is believed to recover by neuronal plasticity, but many a time it doesn't ensure independent living. Chronic sequel of traumatic brain injury may include decreased functional abilities, increased dependence on others for assistance with activities of daily living, increased distress and decreased life satisfaction [2]. In both chronically ill and traumatically injured populations, a links have been demonstrated between religion, spirituality and rehabilitation with the outcomes. In the desperation to achieve survival and better quality of life in severe traumatic brain injury (STBI) patients, alternative modalities for healing and recovery have been explore and tried.

Mahamrityunjaya Mantra, verses derived from Rig Veda, (RV 7.59.12) the oldest scriptures of human civilisation in the form of oral compilation of distilled wisdom and science [3]. For several thousand years it has been believed that it's a death conquering or life restoring mantra and it has impact on healing and recovery from severe life threatening conditions [4-6].

Mantra means a sacred utterance, numinous sound, or a syllable, word, phonemes, or group of words believed by some to have psychological and spiritual power in Sanskrit. The specific grouping of these powerful sound vibrations of the syllables of Mantra has an impact on the mental, physical and psychic consciousness. Chanting these mantras with belief

and discipline also helps in healing our body along with our mind. There have been numerous incidences that chanting different mantras have cured many people of various diseases in mysterious ways [3-4].

A report revealed that many individuals, who have suffered with TBI, used religion and/or spirituality beliefs to cope up with the chronic stress associated with the long-term effects of brain injury. Spirituality has been shown to significantly improve recovery from many illnesses, including cancer, cardiovascular disease, neurologic disorders, musculoskeletal disease, and mental health problems. Objective results from numerous clinical scientific studies have demonstrated reduction in stress, relief of pain, improved recovery from surgery, reduced depression and anxiety [6].

Research on religion and spirituality among TBI survivors is very sparse, no prior research has explored the potential role of religion and spirituality and its correlates on rehabilitation outcomes in Indian population yet. In the past several years, interest in religion and spirituality has increased among social scientists.

An area of a specific interest has been developed to know the mechanism by which religion and spirituality serve in the lives of individuals, who have been confronted with a traumatic event or chronic illness [7]. Previous study claims that frequent religious attendance may convey better physical health is by lowering psychological stress, thereby reducing the production of IL-6 and the release of cortisol and other substances that adversely affect the immune system [8].

A study conducted in Kentucky and North Carolina showed

that almost half of patients wanted their physicians to pray with them if possible [4]. In a poll conducted by the American Academy of Family Physicians, an overwhelming 99% of 296 physicians stated that religious belief could heal [7].

In view of lack of any significant recovery in severe TBI patients this study was initiated to attempt validation of healing impact of age old Mahamrityunjay mantra or verses in STBI patients. The current study was designed to evaluate whether (1) Receiving intercessory prayer (Vedic Maha Mrityunjaya chants) or (2) Attempt to establish that receiving Maha Mrityunjaya chants is associated with uncomplicated recovery after severe traumatic brain injury.

METHODS

Study Design

The Study of the Therapeutic Effects of intercessory Prayer (Maha Mrityunjaya Chants) was a pilot randomized clinical trial conducted according to protocol approved by Institutional Ethics committee with ref. no-105)6/2015)/IEC/PGIMER/RMLH/9649, ABVIMS, Dr Ram Manohar Lohia hospital, New Delhi. Informed consent was obtained from all patients.

Patients

A total 40 patients of both the gender (male and female) were recruited as per defined criteria of the study. Inclusion criteria for patients were age between 18 to 45 years, admission to a referral trauma centre and Intensive care unit (ICU) of Dr Ram Manohar Lohia Hospital, New Delhi, informed consent, glasgow coma scale (GCS) score from 4 to 8 at admission and patients within 24 hours of injury.

Patients were excluded if they were: severe anoxic intracerebral damage or brain death or has been participated in another study. There was no eligibility criteria relating to religious belief patients of any or no religious faith were eligible to participate.

Study procedure and Data collection

Patients with severe traumatic brain injury were admitted in ICU at referral trauma centre of Dr Ram Manohar Lohia Hospital underwent a blood sample withdrawal for cytokines (TNF- α , IL-6, IL-2, INF- gamma) analysis at the earliest and stored in Deep freezer at -80°C. Patients, who met the inclusion criteria, were screened for the study and those who gave consent were recruited and randomized to Prayer group (patients, who received intercessory prayer for 9 days with standard treatment as per brain trauma foundation (BTF) guidelines and control group (who received only standard treatment as per BTF guidelines). Obligatory information including demography, mode of injury and clinical history at the time of admission was recorded.

Each patient's attended was informed about the study and asked to sign the legally acceptable representative (LAR) and study informed document. Enrolled patient's name with Gotra (sir name), date of birth, place of birth and birth time information were forwarded to head pundits, who led recitation process of Maha Mrityunjaya Chants in a temple (Devsadnam) of Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha, New Delhi. Patient's relatives/attendants participated on the behalf of patients for duration of nine days, by a chosen panel of pundits (7 pundits). These Vedic Maha Mrityunjaya chants (shlokas for 1.25 lakh times) were started by the patient name soon after the randomization. The patients in the non-prayer group were continued to receive standard treatment as per BTF guidelines.

GCS of the patient was recorded by a neurosurgery resident every day on round at 8:00 AM, who was blinded to the intervention. Blinded patient's relative, Neurosurgery Residents and nurses were unblinded at the end of the study.

Various neurological outcome parameters like mortality, Glasgow Coma Scale (GCS) score, Extended Glasgow outcome score (GOS-E) and Functional Independence Measure (FIM) score were assessed at baseline, at discharge, at 6th and at 12th months of prayer [2].

Pre (before prayer) and post prayer (after prayer at 9 days), human Cytokines (TNF- α , IL-6, IL-2, INF- gamma) were assayed using in-vitro gen, Diaclone-France kits using ELISA Reader according to the manufacturer protocol .A repeat hematology, biochemistry laboratory test were done at after 9 days (post prayer), at discharge at 6th and at 12th months after randomization.

Randomization and allocation procedure

Study staff observed as each patient relative opened their randomization envelope, but remained unaware of the contents. The enrollment form (patient's and their LAR name details, first initial of last name, study identification number, dates of randomization) was then faxed to the Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha, New Delhi. Patients were instructed to refrain from notifying study personnel or hospital staff of their treatment assignment.

Statistical analysis

Statistical analysis was carried out using statistical software SPSS version 17. The data were presented as no. (%) or mean \pm SD/median (Min, Max.). The base line characteristics were compared between the groups using Chi-square test for categorical variable and Student t-test (independent t test and paired t test) for continuous variable. The primary outcome mortality rate was compared using student t test. The results were reported as difference in proportion (95% CI). The cytokines levels (difference in Mean) between the groups were compared using student t test. The association between cytokines level and in functional outcome was calculated using student t test. P-value <0.05 was considered as statistically significant.

RESULTS

A total 40 patients of both the gender from Delhi and its neighboring areas in India, injured with severe traumatic brain injury were recruited and investigated as per scheme are shown in [Figure 1].

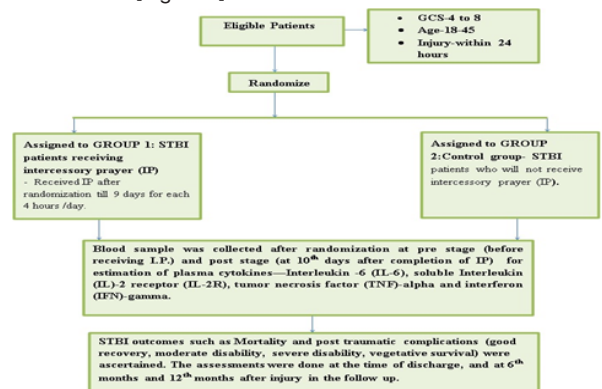


Figure: 1- Study plan for Maha Mrityunjaya Chants effects in STBI patients

The mean age of the 40 recruited patients was 30.4 years; there were 35 men (87.5 %), and 5 patients were female (12.5%).

Recruited patient showed mode of injury as, Road traffic accident (RTA) (n = 28, 70 %), followed by fall from height (n = 10, 25%), and assault (n = 2, 5%) (Table 1), sensorium of patient after injury included loss of consciousness alone (LOC) (n = 11, 27.5 %), LOC with eye, nose, throat (ENT) bleed (n = 10, 25%), LOC with ENT bleed and seizure (n = 2, 5%),

LOC with vomiting (n = 9, 22.5%), and LOC with vomiting and ENT Bleed (n = 8, 20 %) [Figure 2].

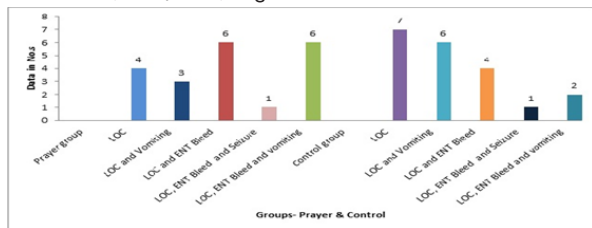


Figure: 2- Baseline sensorium characteristics between Prayer and Control group

CT/MRI radiology finding of brain showed, contusion alone in (n=6, 15%), contusion with midline shift (n = 5, 12.5%), Diffuse axonal injury (n=4, 10%), EDH (epidural hematoma) (n=12, 30%), Hemorrhages (n=3, 7.5%) and SDH (subdural hematoma) (n=10, 25%) [Figure 3].

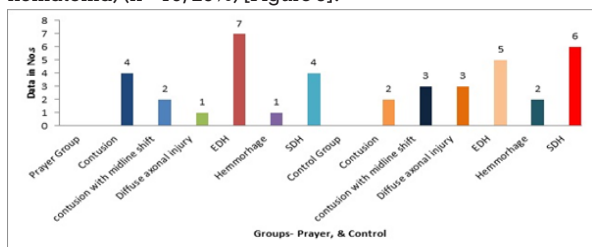


Figure: 3- CT/MRI based injury significance difference among Prayer and Control group

In total, (n=15, 37.5%) in Prayer group and (n=18, 4) in control group were undergone surgical procedure while (n=5, 12.5%) and (n=2, 5%) managed conservatively in both group [Table 1].

Table 1- Baseline clinical characteristics and mortality comparisons between Prayer and control group

	Demographic Data	Control=1,	Prayer=2
Injury Mode	Assault	1	2
	Fall from height	1	1
	RTA	2	8
Undergone Surgery	No	17	11
	Yes	5	2
Mortality	No	15	18
	Yes	8	6
		12	14

Table values represent as number of participants (n). Comparisons were done between Prayer and placebo control group.

Neurological outcome

As a primary outcome, mean fatality ratio was 35 % (14 patients) in placebo control group and 30% (12 patients) in prayer group. This showed no significant difference among both groups [Table 1].

As a secondary outcome, at admission, mean GCS of the prayer and control groups consist of 6.25 ± 1.11, and 6.95 ± 1.39 respectively, which after intervention at discharge, increased to 11.00 ± 1.30, 9.17 ± 1.32 respectively. GCS means between both control and prayer groups showed a significant difference with P-value= 0.02 [Table 2].

Table 2- Neurological outcome analysis between two groups

	Control = 1	N	Mean	Std. Deviation	p-value
Pre GCS Score	1	20	6.55	1.395	0.458

Total	2	20	6.25	1.118	
Post GCS Score	1	14	6.36	1.447	0.08
Total	2	17	7.65	2.448	
Follow up-discharge GCS	1	6	9.17	1.329	0.026
Total	2	8	11.00	1.309	
Follow up-6 months GCS total	1	6	10.00	2.608	0.104
Total	2	8	12.50	2.619	
Follow up-6 months GOSE	1	6	4.83	2.317	0.448
Total	2	7	3.86	2.116	
Follow up-6 months FIM total	1	6	2.17	2.041	0.826
Total	2	7	2.43	2.149	
Follow up-12 months GCS Total	1	6	12.00	3.225	0.188
Total	2	8	14.13	1.808	
Follow up-12 months GOSE	1	6	5.17	2.137	0.178
Total	2	7	6.71	1.604	
Follow up-12 months FIM Total	1	6	4.00	2.366	0.228
Total	2	7	5.57	1.988	

FIM Fundamental Independent score, GCS: Glasgow comma score, GOSE: Glassgow outcome score-Extended Table values represent as number of participants (n) or mean ± SD.

Statistical calculation was done between Prayer and control group. The results values were represented as difference in proportion (95% ci).

Pre- at the time of admission

Where as, Fundamental Independent (FIM) and GOS-E score at discharge, 6th months and at 12th month were not showed and statistical significance in prayer group as compare to control group.

Cytokines analysis

On cytokines (IL-6, TNF-α, IL-2, INF- gamma) analysis, the mean values depicted improved levels of cytokines in the Prayer group. However, no statistically significant co-relation was found between the prayer group and the control group [Table 3]. During the study, pre (at the time of admission), post (at 9 days after the prayer) at discharge, 6th months and at 12th months haematological, biochemical parameters were analysed to correlate any discrepancy. The prevalence of these potentially confounding factors was found satisfactory in both the groups.

Table 3- cytokines analysis outcome analysis between two groups-

	Control= 1, Prayer =2	N	Mean	Std. Deviation	Std. Error Mean	p-value
IL-6 pre	1	20	119.7132	94.68740	21.17275	0.63
	2	19	134.0492	90.45013	20.75068	2
IL-6 post	1	14	65.6149	72.25242	19.31027	0.48
	2	17	84.6792	77.50077	18.79670	5
TNF-alpha pre	1	19	8.1087	6.71183	1.53980	0.92
	2	20	8.3282	8.43284	1.88564	9
TNF-alpha post	1	14	7.7929	5.62822	1.50420	0.13
	2	17	5.2072	2.90981	.70573	6
IF-gamma pre	1	11	2.8488	2.14903	.64796	0.07
	2	7	1.4479	.85746	.32409	3
IF-gamma post	1	10	5.7511	6.58047	2.08093	0.51
	2	9	12.6896	29.71949	9.90650	1
2R soluble (CD-25) pre	1	18	1925.0814	624.14637	147.11271	0.39
	2	19	2065.6789	278.24084	63.83283	
2R soluble (CD-25)	1	13	1899.3692	358.14627	99.33190	0.59

post	2	15	1781.752	737.7456	190.4851	
			7	9	2	

IL-6 Interleukin-6, TNF- α Tumour necrosis factor α , IFN- γ Interferon-gamma, IL-2 Interleukin-2 Values are expressed as mean \pm SD. Analysis was done between Prayer and control group. The results values were reported as difference in proportion (95% ci).

DISCUSSION

According to the primitive man, illness was due to the vagaries of supernatural forces like Gods, Demon etc. surrounded by elemental forces of nature where there were no modern scientific instruments which have enabled man to probe deep into the mysteries of nature. To overcome this type of mysteries people had practiced Mantra, Japa, Homa etc. which is mentioned in Veda. There are certain challenging disorders even in modern science, which they refer as idiopathic origin. Their cause, mode of onset, symptoms, severity and management are entirely different from other disorder [10]. King and Bush-wick polled 203 inpatients in Kentucky and North Carolina showed that 77% wanted their physicians to consider their spiritual needs. Almost half of those wanted their physicians to pray with them if possible [6]. A retrospective study of 26 patients with severe head injury with past Prayer habits Vs Non prayer habits, In the prayer group 1 patient died and in the without prayer, 6 patients died. GCS and GOS scores were showed almost identical mean score. The prayer group at admission Glasgow Coma Scale score were significant factors [11].

Our study had 2 main findings. First, intercessory prayer itself has no effect on neurological complications occurred after Brain injury. Second, patients who were received intercessors prayer has no statistically significant levels of cytokine than patients who were not received intercessory prayer. Whereas mortality data in our study represented 14 deaths in control group as compared to 12 deaths in interventional group, which was not statistically significant.

While our study population appears similar and representative brain patients in the Department of Neurosurgery, LSU Health Sciences Center, Shreveport, Louisiana, the pre GCS proportion of patients in all 2 study groups was similar in our study subjects.

Our findings are not consistent with prior studies showing that intercessory prayer or prayer habits had a beneficial effect on outcomes in STBI patients [7-11]. Possible explanations for the lack of effect of intercessory prayer itself include many points. First, intercessory prayer may not be effective in reducing neurological complications after TBI. Second, the magnitude of the reduction could be smaller than the 10% that our study was powered to detect. Third, the occurrence of any cytokines levels reductions within 10 days of injury may not be appropriate or relevant to the effects of intercessory prayer. We have no clear explanation for the lack of neurological recovery in patients who were certain that intercessors would pray for them.

Our study had limitations: we placed constraints on how intercessory prayer was provided in this study. Although the intercessors were motivated to participate in the trial, they received limited information without any feedback about the patient's condition; did not know or have any communication with patients or their families; used a standard study intention during their prayers for a study-specific 9 days (anticipated maximum duration of inpatient stay for all 100% of subjects). Prior to the beginning of this study, intercessors reported that they usually receive information about the patient's age, gender and progress reports on their medical condition; converse with family members or the patient; use individualized prayers of their own choice; and prayer for a

variable time period based on their own convenience. Our rationale for altering the way in which intercessory prayer is routinely provided was to enable us to standardize the initiation and duration of intercessory prayer, to assess compliance with provision of study prayer, and to direct the intercessors away from praying for everyone in the trial. The strict study instructions conveyed for intercessory prayer about initiation time, no. of recited chants, and continuity till completion of Maha-Mritanjay Chants.

We could realise that patient's attendants were not regularly available for prayer. Thus our study subjects may have been exposed to a large amount of non-study prayer and this could have made it more difficult to detect the effects of prayer done by the intercessors.

The findings that intercessory prayer, as observed in this study, had no significant effects on neurological outcome from brain injury may be due to the study limitations. Understanding why certainty of receiving intercessory prayer was associated with a higher incidence of complications will require additional study. Private or family prayer is widely believed to influence recovery from illness and the results of this study do not challenge this belief. Our study focused only on intercessory prayer as provided in this study and was never intended to and cannot address a large number of religious questions, such as whether God exists or whether God answers intercessory prayers or whether prayers from one religious group work in the same way as prayers from other groups.

In the current study, although there was limited number of patients, the relevance of unconscious state cannot be ignored. However, we intend to conduct further studies to advance our understanding of spirituality and physical health measures. Several limitations of this study should be realised. This study consists of a small sample size is really underpowered to draw any definite negative conclusions.

CONCLUSION

In an unconscious state, a person's faith and conscious effort may not exist in the same way as in the conscious. To validate the strengths of prayer, we considered only those people who were unconscious following head injury and those who were not aware of the surroundings, including the remote healing powers of prayer. Although this is a moderate group of patients, logistic regression analysis of our data supports the findings of other reports. In the unconscious state, religious faith appears to have not much advantage, because of the above-mentioned reasons of religious habits or faith reduce psychological stress and improve immune response.

Competing Interests

The authors declare no conflicts of interest.

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