

Original Research Article

# Smart use of smart phones in severe TBI (Traumatic Brain Injury) - A miniature Tele therapy

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## Abstract

This is the era of Smart phones. Smart phones have revolutionised all the fields including the field of medicine. Absence of internet coverage in the remote rural areas which was a constraint and limitation for their use has also been overcome by the technological advancements in the yesteryears. Simultaneously the availability of CT and MRI scan has seen the light in the District Headquarters hospitals of North Coastal Andhra Pradesh. In trauma care, the ubiquitous concept of the “golden hour” suggests that the time between the occurrence of an accident and the receipt high quality, appropriate treatment is a critical factor in patient survival. Therefore, saving time from the moment of occurrence all the way through to the moment of appropriate treatment is critical. Introduction of various APPs in Smart phones has made transmission of visual images instant and easy from any remote corner of the world. This advancement in function, applied to the health care sector in India, made an enormous difference in providing emergency specialist care services to the remote areas of India.

## Key words

Golden hour, Smart phones, Viber, Confidentiality, Tele therapy, Whats app.

## **Introduction**

Of the various apps introduced to the health care segment like stroke risk calculation, exercise and calorie consumption, VIBER is one app, which was used by some residents to seek the opinion of their consultants residing at far outreach places by transmitting the patient information through this app. The utility value of the app was thereby presented as very useful to the residents in obtaining the opinion of the consultant. Later on, issues of patient privacy and confidentiality during the exchange of data cropped up as an issue which was raised by many authors [1, 2].

The experience of making use of the smart phone technology provided an entirely different perspective when put to use in the North Coastal Districts of South India, where accessing the opinion of a Super specialist from a District Hospital 30 to 40 km away, would consume a minimum valuable time of 2 hours which is detrimental to the survival of the patient.

## **Material and methods**

During the study period of 2 years from January, 2014 to August, 2015, a total of 261 cases of head injuries reported out of which 69 cases was administered early treatment by WhatsApp. (Table – 1)

## **Results and Discussion**

In the set up of a District and rural centre, patients sustaining injuries were transferred to the District Head Quarters hospital or a private centre and fortunately these centres are equipped with CT scan which is a gold standard for evaluating the status of the patient.

But at the same time non availability of Neurosurgeons at that point of time made the availability of this coveted resource, the CT Scan, a mere investigation of no utility value. It is at this point, where WhatsApp was put to use in transmitting the patient information, for evaluating a patient with trauma, requiring emergency services. (Table – 2, Table – 3)

The CT images obtained in a patient of head injury were transferred to a qualified Neurosurgeon who is located far off. These images were perceived, the injuries were screened immediately and instructions issued with regard to administering, anticonvulsants and in the absence of hypovolemia, anti- oedema measures like Mannitol / Lasix for reducing ICP. Simultaneously the recent cerebral protecting agents were also be started.

Injuries requiring surgical intervention have been advised to be shifted to a tertiary centre equipped to deal with these cases and those which did not necessitate surgery were advised to be treated conservatively.

Experience gained through dealing with this type of cases presented with a lot of advantages.

Advantages:

- No special optical cables / dedicated service provider are required for using this device.
- Simple, uncomplicated procedure, which is well versed by the medical and paramedical staff.
- CT units are available at most of the places in the New state of Andhra Pradesh, at all 10 district headquarters hospitals, but the services of the Neurosurgeon is lacking. The use of these mobile apps can be used to take the Neurosurgeons opinion.
- Traffic jams pose a major threat in metropolitan cities/ major cities, in spite of the availability of surface transportation and ICU / Infrastructure for surgery. The golden hour advantage is lost. But, with this app, image can be transferred to qualified Neurosurgeon much before the arrival of the patient and the necessary medical treatment instituted at the earliest.
- Before the patient reaches to tertiary care unit, whole surgical team can be ready in preparedness giving the golden hour advantage to the patient thereby

- decreasing the morbidity as well as mortality.
- Incidentally, the night calls for attending on patients with mild injuries or patients requiring conservative Rx can be minimized.
  - There is no transfer / disclosure of personal identity to any one, except images and the vital data / GCS, so no issues are involved with regard to the confidentiality of the patient [3].

**Table – 1:** Total number of cases with head injuries and that advised treatment by WhatsApp.

Year	Total number of Head Injuries	No. of cases advised Rx by What's app before reaching tertiary unit	Percentage
2014	132	38	28.78
2015	129	31	24.03

**Table – 2:** Showing the number of CT and MRI units present in the neighbouring districts of Visakhapatnam. (Coastal Andhra Pradesh)

Place	Number of CT scan units	MRI
Srikakulam	4	2
Vizianagaram	6	2
Visakhapatnam	13	11
Anakapalle	3	0

**Table – 3:** Showing the availability of Neurosurgeons in the neighbouring districts of Visakhapatnam.

Place	No. of Neurosurgeons residing	Visiting Neurosurgeons
Srikakulam	0	2 / weekly
Vizianagaram	0	3
Visakhapatnam	19	Not applicable
Anakapalle	0	2

## Conclusion

The annual incidence of Traumatic Brain Injury in India is an estimated 2 million, with an annual mortality rate of approximately 200,000. Planning is underway to improve and support the Traumatic Brain Injury epidemic by technical and other support. However it is based on the satellite tracking system of patient in the ambulance and guiding him to the nearest tertiary care centre (Level 1). Presently Andhra Medical College, Visakhapatnam has been selected to undertake the pilot project soon. The proposed pilot project or any such ones may be very scientific but need a lot of infrastructure which is financially demanding and takes a long time to establish. The smart sharing through the mobile

app is a very simple, user friendly device which is cost effective and can be handled without any specific training.

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