Organ or tissue donation as such is not a new concept. Most of the people are aware of kidney donation from the live donors or eye donation from the dead ones. Both these donations are socially and biologically acceptable though, we cannot say, these are very popular.

**History of organ donation from the brain dead patients**

Previously, many a times, organs were retrieved from the dead persons with the purpose of giving life to the people who could not do without these. Unfortunately, in most of the cases, donated organs had failed. The reason was that these organs were harvested only after the person was completely dead. In the process of death, the condition of these organs would deteriorate, which, ultimately led to their rejection by the recipient's body (Valco, 2002).

The brain dead are those patients who are dead for all practical purposes (Shroff, 2011) but they are breathing through ventilators in the intensive care units of hospitals. However, it was only in 1968 that a new definition of death in the form of brain death was evolved by Ad Hoc Committee of the Harvard Medical School in the United Kingdom. This committee defined brain death as ‘irreversible coma’ with the patient being totally unreceptive and unresponsive with absence of all cranial reflexes and no spontaneous respiratory efforts during a 3-minute period of disconnection from the ventilator. The report of this committee published later without disclosing the name of the author in 1968 in the Journal of American Medical Association is considered a landmark article in context of transplants. By this definition, a brain dead person could be perceived as a treasure of organs and tissues that could give life to seven to nine people and improve the quality of life of a number of others by donating cornea, bones, skin etc. This all was however, intrinsically linked to the legislative mechanisms, political will, expertise and infrastructure available in various countries.

This Ad Hoc committee paved the way for organ transplant from the brain dead persons. In due course legal systems in various countries moved in the direction of legalizing organ donation from brain dead persons. It was envisaged that giving legal sanction for organ donation and transplant, will put to an end to unethical practice of organ trafficking, transplant tourism, sale of organs etc. However, this donation-transplant business continued to be dogged by some ethical and emotional issues. For many of us, organ retrieval from brain dead cadavers means death twice for a donor (Lock, 2000). However others consider it as the kindest act for humanity (Green, 2000).

**Concept of brain stem death**

Brain stem death is a new medico-legal definition of death. Its main purpose, probably, is to popularise organ donation. Brain stem dead person is a dependent patient who is breathing through a ventilator even though one can feel his pulse, blood pressure and other signs of life. Brain stem death holds that the lack of functioning of the entire brain is the truest sign of death and that the rest of the body will soon stop functioning even if the ventilator is continued (Hartwell, 1999). Brain stem dead person appears to be alive because he is sustained by a complex technological innovations which enable him to breathe and make him warm to touch, take fluids and other forms of nourishment (Slomka, 1995). A brain stem dead person can give life to at least seven dying patients with his two lungs, two kidneys, one heart, one pancreas and one liver besides improving the quality of life for a number of patients waiting for tissue transplant in the form of eye donation, skin donation etc.

**Indian scenario on organ transplant**

Like in many other countries, demand for organs far exceeds the supply in India. India needs more than 2,00,000 organs every year. About 1,50,000 kidneys and 20,000 livers are required annually whereas only 3500 kidneys and 500 livers are transplanted every year (Shroff, 2011). This supply of organ comes mainly either from the living related or unrelated individuals and very less from brain stem dead donors. To bridge the gap of demand and supply of organs India has started a new national programme in 2008 called National Organ Transplant Programme. From 2009 onwards India has been observing National Organ Donation Day every year in the month of November by creating awareness about the topic, arranging seminars, etc.

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Organ Donation and Transplant Act in India

The organ donation by a brain dead person was made legal in 1994, when Parliament enacted the law named as -The Transplantation of Human Organs Act (THOA) 1994. The same year the first heart transplant was done by doctors in the All India Institute of Medical Sciences, New Delhi. The THOA has been in place since 4 February 1995. This law provides for regulation of removal, storage and transplantation of human organs for the therapeutic purposes and prevention of commercial dealings in human organs for matters connected therewith or incidental there to. The law has not made any dent on organ donation and the main source of organs as on date are live donors. Live donations are restricted to two organs only that are either one kidney or a part of liver. Government of India had passed a new bill named as Transplantation of Human Organs and Tissues Amendment Bill, 2011 in parliament.

A new draft Transplantation of Human Organs and Tissues Amendment Bill, has been uploaded on the website of DGHS (MOHFW) for the comments of the public in 2013. To increase the supply of organs from brain dead persons it has made it mandatory for hospitals to have a transplant coordinator who have proved to be very instrumental in other countries including Spain by increasing conversion rates. The coordinator as per the amended bill shall be posted in the hospital’s ICUs and could be either doctors or senior nursing staff members. Under the proposed law, the team of coordinators should be independent of the transplant team. Their main job is to act as liaison between the treating physician and the potential brain stem death donor and the organ retrieval bank (Indian Express, 2011). In India Multi Organ Harvesting Aid Network (MOHAN) having its base in Chennai is working on providing training to transplant coordinator on a war footing (Shroff, 2010).

Operational organ donation networks in India

Almost all states and Union territories except Jammu & Kashmir and Andhra Pradesh have enacted this legislation as per the key person in Directorate General of Health Services involved with national organ transplant programme. However unlike injather countries there is no national database for organ donation available in India. Whereas USA has a national database maintained by United Network of Organ Sharing (UNOS), UK maintains through National Health Services Blood and Transplant (NHSBT). In India, a number of networks like MOHAN (Multiple Organ Harvesting Aid Network); ORBO (Organ Retrieval Banking Organization); ZTCC (Zonal Transplant Coordination Committee); FORTE (Foundation for Organ Transplant and Education) and AORTA (Armed Forces Organ Retrieval and Transplant Authority) are some of the networks maintaining some kind of database. These networks are sharing organs of brain dead donors for transplant within the network of hospitals which are registered for transplant within their states or neighboring states depending on the geographical proximity.

Challenges to Organ Donation and Transplant

In India, the whole process of organ donation has thrown a number of challenges which are as follows.

Acceptance of brain stem death: The first and foremost challenge is acceptance of brain stem death as real death by the relatives. The brain dead person may look like dying but not dead, he has the heart beating; pulse can be felt; body is warm to touch, doctors and nursing professionals themselves may be in a dilemma to accept brain death as death of the person, they may feel hesitant to counsel the relatives to donate the organs. Hence the need for organ transplant coordinator has been felt organ transplant laws made it mandatory in 2011 for all organ harvesting hospitals to have at least one transplant coordinator. Not only this In India organ donation and transplant has not been in the curriculum of either medical or nursing students.

Training of personnel to manage the brain dead persons: Another challenge is training of personnel to manage the brain dead person on ventilator for preservation of the organs. It is very important to know that government hospitals are not well equipped in comparison to private hospitals and about 85 percent of transplant surgeries are taking place in private hospitals.

Organ allocation and sharing: Other challenge of organ donation and transplant facing India is the organ allocation and sharing which further depends on timely transfer into a best matched recipient in terms of matched blood group and six Human Antigen Leucocytes although unmatched blood group patients have also been transplanted organ recently. Equitable organ distribution is an important component of any organ sharing - state or national network. The logistics of the flow of organs depend on the maximum acceptable ischaemia time of the organ, the waiting list of the patients in hospitals for various organs among the participating hospitals in the city, state or neighbouring states, the transport logistics between cities and affordability and acceptability of the transplant by the recipient at that spur of time. In one case about seven people who were waiting for heart transplant refused at the time when it was made available to them.
Effective networking: Unlike Organ Procurement Transplant Network (OPTN) in United States of America and other global networks there is no national policy on organ sharing in India. Different networks in India have evolved their own strategies of organ sharing. Some networks are sharing organs within their own state and some with neighbouring state registered government and private hospitals. There is scarcity of organs hence each and every retrieved organ needs to be transplanted in time. Acceptable ischaemic time ranges from organ to organ making it inevitable to have different policies for each retrieved organ. For example acceptable ischaemic time is 4 hours for heart; 12 hours for liver and maximum of 48 hours for kidney. For heart a very close geographical proximity is required hence is shared within the same city. Kidneys can be shared with neighboring states as is done between Bangalore, Chennai and Hyderabad by Multi Organ Harvesting Aid Network (MOHAN). The principle of sharing deserves to be based on best matched organ depending on blood group matching and maximum number of matched HAL to minimise rejection of the transplanted organ.

Transport: The whole process also needs a very effective transport system. Chennai has roped in police force for effective organ transplant through green corridor mechanisms (Shroff, 2010) which ensures timely transfer via police vehicles and immediate transplant of the retrieved organ.

Strong auditing system of retrieved organs: Further a very strong auditing system of retrieved organs, shared organs and also the results of transplanted organs are required in India. The regular auditing will prevent wastage of retrieved organs, develop cost effective mechanisms of organ transplant and shall help in evolving the system. The policies of organ sharing were developed by patients and transplant professionals together in USA for a fair and equitable distribution of organs. It is not possible for any organ retrieval hospital to utilise all retrieved organs hence the need for organ sharing. The AORTA (Armed Forces Organ Retrieval and Transplant Authority) stands out in terms of organ sharing. It has not only helped its own people through its own network but has also shared more than 14 kidneys with All India Institute of Medical Sciences (AIIMS) for maximum utilisation of organ assets as revealed by a key person involved in organ sharing.

Lack of awareness: There is lack of awareness not only among the public but among the professionals too. In 2013 act on organ and tissue transplant; one of the forms is the pledge form The author of this article was given the responsibility of pre-testing the form. The author found very little awareness about the topic not only among the nursing students but medical students too including faculty.

Lack of incentives: There are no incentives for the public who come forward and donate their relatives organs. Occasionally they are felicitated. They are not told who benefitted from these organs. They want to see the recipients who have benefitted out of such donations as was seen in one of the felicitation programmes by the author. Identity of the recipients is not revealed anywhere in the world including India. Best incentive for a donor family could be seeing the recipients doing well with their relatives organs was told by one such donor family. Abroad, where donor families have come to know of the recipients through unofficial routes, new healthy, fulfilling and long lasting biosocial relations have emerged.

Conclusion
Organ transplant from brain stem dead persons in India has not picked up in India although legislation was there since 1994. It has thrown a number of challenges which need to be properly addressed besides training professionals to become organ transplant coordinators; well trained professionals for maintenance of brain dead persons on ventilator. Introducing this topic in the syllabus of all professionals taking care of patients and introducing a chapter on organ donation in school curriculum are some of the challenges requiring immediate action.

References