Name (First M\_Last)

Institution Name

Introduction

**TBI health and Growth**A wide range of people nationwide is affected by Traumatic Brain Injury (TBI). One thing remains constant; condition of human suffers, both externally and internally. It has been confirmed by studies that caregivers of TBI patients may experience the feelings of anger, anxiety, distress, recurring depression, and burden (Brain Injury Association of America [BIAUSA], 2015). The most alarming and detrimental thing is the number of disabilities and deaths that are caused by TBI. In the USA, these deaths contribute in the neighborhood of 30% of all of the deaths that are related to injury (Centers for Disease Control and Prevention [CDCP], 2014). TBI’s effects involve impaired memory or thinking, emotional, sensation function, or movement (CDCP, 2014). The utter devastation and ferocity of those that are suffering from this condition are caught up in life severely, and in return, the negative prospects can have a long-term effect on family, friends, and relatives or even on a whole community. The study that is purposed will review collective research models, current literature and data that is based on the transplantation of neural stem cell on the brains that are injured and their positive results. Moreover, the assisting procedures that are newly implemented for drug therapy on similar injury sites. In a controlled laboratory setting, studies are collected primarily and modeled on rats for the effectiveness of the required protocol of treatment. Goals of study will also involve newly invested research at the University of Michigan Medical School and the University of Miami Miller School of Medicine so as to additionally support the listed above-mentioned research.
**Background:**

**Origins of Traumatic Brain Injury and Impact**Traumatic Brain Injury is mainly found in the patients who have experienced severe head damages and injuries that disturb the standard functioning of brain. Not all the bumps and blows certainly result in the formation of TBI, it is of utmost importance to know that it is based on how much severe the head trauma is, and it can be in range of mild (momentary variation in the mental status) to serious (major loss of motor and cognitive function or a long period of unconsciousness) (CDCP, 2014).Traumatic Brain Injury’s most cases result in slight indications like concussions, on the other hand, if it is left unchecked, then it can outcome in severe injuries and in few cases it can even result in death. Traumatic Brain Injury has a very random process of recovery and there are many factors that contribute to the final result, such as similar goal-oriented direction of patient and healthcare team, pre-morbid personality, family support, length of coma, specialized rehabilitation services, age at which injury occurred and particular area of the brain stem or brain that has been damaged (BIAUSA, 2015).
 **General Problem Statement**The general problem is presented with the statistics that are delivered in 2010 by the CDCP; Emergency Department cases that were around 2.5 million in number, were related with Traumatic Brain Injury; either represented separately or with the combination of another injury in the U.S. (CDCP, 2014). In more than 280,000 hospitals, TBI was a diagnosis, and of cases in which 50,000 ended in death while and before at the ED (CDCP, 2014). Leading causes of Traumatic Brain Injury. According to the data collection of CDCP 2014, include: unknown (19.0%), traffic accident / motor vehicle (14.3%), assaults (10.7%), struck by/against (15.5%), and falls (40.5%). Moreover, according to CDCP, data suggests that falls cases are the main reasons for Traumatic Brain Injury from 2006-2010. In addition, falls excessively affects the oldest and youngest groups across the board, even though no definitive association represents causation among; the younger you are, the less likely you are to fall and the older you are, the more likely you are to fall and become laden with TBI.
**Specific Problem Statement**The specific problem in Traumatic Brain History is that, it can be based on the scientific evidence that out of seventy-three institutions that are currently focusing on Traumatic Brain Research, only 3 are currently using neural stem cells to stimulate neurogenesis in the brain. In addition, out of those 3 institutions, only two have drug permitted by the FDA that elevates the rate of glucose action in injured regions of the brain (National Institute of Neurological Disorders and Stroke [NINDS], 2016).
As mentioned in the previous paragraph, Traumatic Brain Injury is the main cause of disability and death in the USA; it accounts for a great portion of ED attention and care, positive outcomes and treatment procedure in the modern world of today medicine are irregular in nature and thus it can be devastating for the emotions of the family of the patient. Only the University of Michigan and University of Miami Miller School Of Medicine have been successfully able to halt the lasting effects of the reduced metabolism of glucose because of TBI and genetically modify neural progenitor cells, in order to elevate the rate of histopathological results, hence elevating hippocampal neurogenesis in patients who suffer from Projectile Ballistics Brain Injuries. If professionals of clinic start to implement the research methods and models that are tested in the lab setting, it is strongly believed that treatment prognosis and results of TBI, will head towards the right direction.

**Purpose of the Study**Purpose of this research is to collect the current data set for the analysis on Traumatic Brain Injury research and test the efficiency that is related with the transplantation of NPC’s, and the outcomes of localized drug therapy sites of main traumatic injury of the brain. When statistical data is associated to those research services which aren’t applying this treatment methodology, review of literature of information concerning to effectiveness of lab results and conclusion of data synthesis; why most of the research will be driving towards this latest branch of medicine in the near-future will be discussed in detail too. The researcher hopes that this study will raise awareness of the positive steps that are associated with this particular type of research methodology and goals that have been achieved. By inspecting the influence of the programs at the University of Michigan and the University of Miami, and the addition of the present knowledge in the areas of emergency medicine and neuroscience, more preventive resources involving latest integration valuations like genetically modified pro-survival multi-neurotrophin will be apportioned nationwide to this particular type of injury (Blaya, Furones-Alonso &,Tsoulfas, 2015).
**Research Questions**
Following are the questions that a researcher hopes to address particularly:
1- Does involvement of surgery create improved treatment results than the injected Schwann and NPC’s cells within brain stem on Traumatic Brain Injury patients over a long period of time?
2- Is there any connection between the elevated rate of the utilization of brain glucose on affected Traumatic Brain Injury rat that has been injected Chronic A20?
3- Is there enough clinical evidence to back that the treatment of neural progenitor cells increases neurogenesis activity within Traumatic Brain Injury structures of the brain.
4- After the neural stem cell transplant on endogenous neurogenesis, what are the effects and neurobehavioral results of PBBI patients?
5- How do the transfer of the trageted site and concentration of cell to deliver maximum engraftment of neural stem cells accelerate cognitive and motor behavior in mice model (function similar to the human brain)?

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