Stem Cell Research As A Great Innovation For The Future Of Public Health

Stem cells are known as the foundation of all cells in our bodies. During fetal development, stem cells are the cells that kick start the creation of the embryo forming into a fetus by differentiation into various specific cells. These cells are just as important in adults, however, they are limited in the types of cells they can differentiate to. Throughout a person's life, stem cells from the bone marrow are continuously creating red blood cells, white blood cells, T cells, and B cells; all of which are a part of or immune system. Stem cells from developed tissues are only able to create only a certain type of cell. With time, stem cell research could reveal the process that cures many ongoing diseases that we see today and feel are impossible to cure; also it can change how hospitals perform organ transplants and reproductive issues.

Stem cell research is popular in exploring different ways of curing many diseases that seem impossible to cure today. Some of the best stem cell samples we could get are from the human bone marrow, umbilical cord, or from aborted embryos. These stem cells have been used in bone diseases, cancer, diabetes, gastrointestinal disease, immunological responses, and many more diseases (Trounson et al., 2011). Embryonic stem cells are favored in curing diseases because they are highly pluripotent and are able to differentiate to an unlimited amount of cells that could be found in the human body. It has been proposed that the use of embryonic stem cells will aid researchers in to understanding early human development, research toxic effects of drugs, and cell replacement therapies (Ismail, 2015). The stem cell approach would avoid the need to cure the disease with only a bone marrow transplant, which includes an extremely painful extraction process. Parents of newborn babies have donated their baby's umbilical cord after birth so the stem cells could be collected to be used in research or to be used for their own child's health (Ismail, 2015). Adult stem cells have the capability of creating multiple cell types since they a multipotent (Ismail, 2015); however, they are limited in their differential capabilities. Their limitations have been found to be because of the lack of specific identification markers (Strauer et al., 2003). Even with their limitations stem cells extracted from adults have been grown in the lab to create a "clone" of the organ so it can be transplanted to an individual whose life depends on it (Ismail, 2015).

In the topic of aborted fetuses, even if most of these samples do come from aborted fetuses, which must have been signed off by the mother when they agreed to have the abortion done. As far as we know in science, it is not possible to transplant an embryo to another female or be grown via incubation due to the lack of the same gametic makeup as the original mother. Whenever an embryo is aborted, the process in itself makes the fetus look almost indistinguishable. In a non-consequentialist point of view the aborted fetus would generally go to waste, why not make it useful in increasing the public's health; That one embryo could possibly save, possibly, hundreds of lives. In the end it is similar to donating an adult body to science or if parents wanted to donate their deceased child's organs to someone who really needs it. If researchers were to use animal embryonic stem cells, there would be a great risk of possibly causing more damage to the person due to the difference in their genome. It is a possibility, however, it may be expensive and take longer in doing.

There is a large amount of controversy about obtaining these stem cells since the best stem

cells can be obtained is through the bone marrow, umbilical cords, and embryos. Bone marrow stem cells are normally taken from adults, since they are autonomous individuals taking samples from them is not considered to be controversial. The most controversial way to obtain stem cells is via the umbilical cord and aborted embryos. This controversy is due to cultural and religious beliefs. Like, the current political climate when it comes to abortions, many say that the embryo is still a human being and still has rights. Many of the people that argue against the use of embryonic stem cells say that it is not the fetus's fault for the parents' bad life choices or that it is cruel that the fetus does not have the ability to have a say in what happens to its life. What they say does make a valid point, however, that is not a decision that outside people could dictate. In a way the parent deciding what to do with their fetus would be the same as a parent deciding on the medical treatment of their underage child. Due to this belief, during Bush's presidency, he restricted all funding to stem cell research because it was considered unethical to collect the stem cells from these aborted embryos (Ismail, 2015). When transplanting these stem cells, like with any other medical procedure, people do run the risk of the body rejecting the stem cell, especially if they are sourced from an embryo (Trounson et al., 2011). It is implied that stem cells do not have the capabilities to completely cure or repair flaws caused by nature, which is why many prefer to stay on the "normal" medical treatments (Segers et al., 2017).

Researchers have also been looking into stem cells derived gametes for use in assisted reproduction technology. Many believe that this research would benefit greatly for people who want to reproduce but cannot do it naturally due to the lack of functional gametes in both males and females. With the increasing infertility rates, this gives couples another option other than IVF to, possibly, use their stem cells to make the embryo genetically theirs instead of using some stranger's gametes that may contain a possible genetic disease or deformity. Most of the stem cell samples they use for these procedures are embryonic stem cells or from somatic cells that are reprogrammed into pluripotent stem cells (Segers et al., 2017). Many of the embryos obtained for this research have been donated by people that have gone through IVF and found no use for the remaining embryos. Researchers have found that using embryonic stem cells is easier to use than using lab-made embryonic stem cells or gametes produced by pluripotent stem cells. In order to make sure that the embryos created are fully functioning and prevent the insemination if a faulty embryo, researchers have had to create and destroy embryos. Continuing, this research would not only allow heterosexual couples to have children that are genetically their own, but also allow postmenopausal women, same-sex couples, solo reproduction, and multiplex parenting (Segers et al., 2017).

Reproductive research is accepted for the typical heterosexual couple who are not able to produce gametes naturally due to their sex organs not functioning like they should. However, the controversy is from this research being applied to premenstrual women, same-sex couples, solo reproduction, and multiparent reproduction (Segers et al., 2017). Since this gives premenstrual women a chance to have a child at a later age, like how many men do, people argue about having a child at that age will be too much for these women and they will not be capable of keeping up with their child. If it is difficult for a younger person to keep up with their child, then women of a later age would have an exceedingly hard time caring for the child. Also, the fact that these children will have less time with their parents than if they were birthed by a mother of a younger age could cause phycological stress to the child. When it concerns same-sex couples, they will have the chance to have a child that is gametically both parents, even if they do have both parent's genes they will still need a gamete from the opposite sex to 'finish' the creation of the child. People that are against same sex couples having this child are more concerned with the child phycological well-being; however, this is a topic for a different essay.

The same concern applies to solo parenting and multiplex parenting, but the only difference is that people speculate about possible diseases and disabilities due to the child being genetically only their own in the solos parenting side and too many genes in the multiplex parenting. Something Segers (2017) considered in their article is that a child from a multiplex family would have to go through the struggle of the parents deciding on the wellbeing or future of the child; another phycological problem.

Stem cell research, using embryonic stem cells, in the US and many countries, has had restrictions in funding or banned by the government. Even with the lack of government funding, this research has been able to continue due to private funding (Ismail, 2015). Adult stem cells will always be used in this research because it is not as taboo compared to embryonic or umbilical stem cells. No matter what there will always be autonomous people that made the decision to donate their bodies after death to better scientific research or as organ donors. As far as we know embryonic stem cell research will take time to become acceptable since many people strongly advocate for the rights of embryos due to their cultural or religious beliefs. When that time comes there will be a chance to save hundreds of thousands of people's lives all around the world because the best way to heal the body is to give it the resources to be able to heal itself without the need of a ton of synthetic drugs like we do now. no matter how much researchers try to do manipulate adult stem cells to mirror the actions of embryonic stem cells, it will not be the same. Stem cells lose their functions as the body ages, just like their host. As a society, we must think of an ethical way of obtaining embryonic stem cells that would, hopefully, satisfy the majority. This new research is a great innovation for the future for public health.

Works Cited

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