

Derech HaTeva

A Journal of Torah and Science



Volume 25
2020-2021

A Publication of Yeshiva University, Stern College For Women

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New York, NY 10033

Acknowledgment

With the help of Hashem, this year marks the 25th volume of Derech HaTeva. The concept for an undergraduate Torah-science publication arose over a quarter of a century ago, with the realization that science majors at Stern College have two unique strengths - a solid secular education and a strong Torah foundation. Only at Stern College for Women (SCW) could these two worlds meld into one - that of Torah U'Maddah. It is often thought that Torah and science are at odds with each other. However, that approach is very naïve, unsophisticated, and for the simple-minded person. Many passages in Ta'nach and in the Talmud can only be understood fully if the individual is knowledgeable in the biological, chemical, and physical sciences, as well as of medicine, astronomy and earth science. The over than 300 articles authored by SCW undergraduates are often cited in the Torah and science literature and are used as classroom assignments in Jewish day schools, yeshiva high schools, and in kiruv organizations. The inclusion of Derech HaTeva in the YUTorah.org web page and greatly enhanced its readership audience, making it available to all. Appreciation is expressed to Dr. Babich who works behind the scenes, but the major accolades go to the over 300 authors who made this vision a tangible reality.

Sincerely,

Editors-in-chief

Miriam Radinsky
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Dedication

It has been over a year since the coronavirus pandemic has changed the world as we knew it. We watched as our communities learned to cope with this new normal with our teachers, families and community leaders quickly adapting to provide us with the support and resources that we needed to stay safe and continue to grow. Our shuls have kept us connected to Torah while we had to isolate at home. Our teachers helped us continue in our education when we had no access to our normal tools. Our friends and families helped us appreciate what we had when so much was unknown. All while we were adapting to this new life, healthcare workers and researchers worked tirelessly to develop a vaccine to combat the virus.

We would like to dedicate this year's journal to the researchers who continue to develop vaccines against the virus and to healthcare workers who aid not only in administration of the vaccine but also in caring for the victims who succumb to the virus. Due to their tireless efforts and scientific work, we are seeing a hopeful turn of events in this pandemic.

At the beginning of Megillat Esther Haman is promoted to a royal position in the Persian kingdom and then planned to destroy the Jewish people. The megillah describes the promotion as occurring "אחר הדברים האלה" - "After these things." Rava explains that "these things," refers to the chain of events that Hashem put into place that would later save the Jews from Haman. Such events include Esther being appointed as queen and Mordechai being inscribed in the Book of Remembrances. This highlights the principle of "הקדים הקדוש ברוך הוא רפואה למכה" - "Hashem sets up the remedy before the plague." Long before calamities arise, Hashem puts in place the means through which salvation can occur.

In the 1790s, Edward Jenner developed the first vaccine against smallpox. Since then, researchers have been working to develop a variety of vaccines against diseases such as influenza, meningitis, pneumonia, shingles, and more. These diseases that used to be extremely dangerous, if not fatal, now have significantly lower mortality rates. These advancements have been progressing long before this global pandemic, but we must acknowledge that without them our situation today would look much more dire. We must give tremendous gratitude to Hashem for these medical milestones and recognize that we are witnessing Hashem's compassion through the paradigm of "הקדים הקדוש ברוך הוא רפואה למכה."

We could not complete this dedication without mentioning Rabbi Norman Lamm זצ"ל and Rabbi Jonathan Sacks זצ"ל, both of whom we have lost this year. They were both leaders of the Yeshiva University community and the Jewish community as a whole. Rabbi Lamm and Rabbi Sacks embodied the values of Torah U'Maddah and it is due to their influence that our community appreciates the imperative role that science plays in our world, while ultimately understanding that all healing comes from Hashem. May their teachings and influence give us the merit to see a complete ending to this pandemic, and ultimately bring us closer to the final redemption, במהרה בימינו, speedily and in our days.

"Hashem sets up the remedy before the plague" - "הקדים הקדוש ברוך הוא רפואה למכה"

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Elective Surgery

Sarina Alexander

The Torah says, “he shall certainly be healed” [1]. It is derived, from here, that it is permissible for a doctor to heal his patient through medicine and surgery if there is a medical need. The question arises, however, whether or not surgery is allowed according to the Torah in cases where there is a lack of medical need; i.e., as in elective surgery [2].

Elective or plastic surgery is divided into two categories; cosmetic and reconstructive. Cosmetic surgery is performed to enhance one’s appearance, while reconstructive is performed to correct or fix a physical defect. These two categories do overlap and can be subjective, however, they are differentiated in halacha. Rav Shlomo Zalman Aurbach, for instance, holds that plastic surgery to fix a defect that causes a person pain or embarrassment is allowed. However, it is forbidden to undergo surgery solely to enhance one’s physical appearance [3].

There are three basic halachic issues that come up in the poskim with elective or plastic surgery: the issue of chavala, sakanos nefashos, and particularly relating to males is the issue of simlas isha. The Achronim discuss these issues at length.

The Talmud discusses the issue of chavalah, wounding oneself unnecessarily, and concludes that a person does not have the right to injure himself in any way [4]. This is also the psak of the Shulchan Aruch and Rambam. Rav Menashe Klein draws a distinction between elective surgery purely for cosmetic reasons, to improve one’s appearance, and surgery to fix a mum, a blemish or abnormality. A definitive mum might not be considered a chavalah and therefore one would be permitted to undergo surgery to fix it [5]. Rav Moshe Feinstein writes in his tshuva that when the Rambam describes the issur, prohibition, of chavalah, the Rambam adds an extra phrase of *derech bizayon* or *derech nitzayon*. Therefore, says Rav Moshe, going through surgery to fix a physical defect, *derech tikkun*, does not fall into the category of chavalah. Surgery in a

form of *derech tikkun* is permissible because it is not part of the issur of chavalah [6]. Rav Mordechai Yaakov Breish writes that wounding is permissible not only for a medical problem, but also if it alleviates pain in any way [7]. Tosfos includes social issues in the definition of pain. Someone who is uncomfortable socially because of his or her appearance falls under the category of “pain” and chavalah would be *mutar* as well [8]. With all that was stated, the three heterim for chavalah are *derech tikkun*, to take care of a mum, and psychological or social pain.

The issue of *sakanos nefashos* comes up in elective surgeries in which the patient goes under general anesthesia or there is some other risk to one’s life. There is, though, a concept in halacha in which Chazal allows dangerous activities that are part of everyday life or have become a social norm. There are risks in driving a car and crossing the street, however, Chazal allows us to do these activities because it is the norm of society. There is, therefore, room to allow plastic surgery because it is considered an acceptable risk in society.

The issur of *simlas isha* does not only apply to clothing, but also forbids men from involving themselves in all feminine activities. The Talmud describes a man who removes scabs from his body. The Talmud allows him to remove the scabs if they are causing him pain, however, if he is removing them to beautify his body, it is forbidden, because of the issur of *simlas isha* [9]. When it comes to elective surgery, this issur, is subjective and depends on the surgery in question. Plastic surgeries that are common practice for men to undergo may not fall into the category of *simlas isha* and would therefore be permissible.

In conclusion, the majority of poskim hold that there is ample room to be lenient in such cases and allow for elective, reconstructive surgery. However, Rav Eliezer Waldenberg, the Tzitz Eliezer, strongly rejects any possibility to allow any elective or plastic surgery. He points out that the Talmud (Bava Kama 75) learns

from the pasuk in Shemos (21:1): “a doctor is permitted to heal” that a doctor needs permission to perform any treatment to a patient. There is permission only in a case of illness, and therefore, when there is no illness, there is no permission. Additionally, the Tzitz Eliezer says there is a hashkafic issue with plastic surgery. It is a dishonor to HaShem by being unsatisfied with the way G-d created man. Rav Waldenberg says that it is forbidden “to improve upon the form engraved upon him by his Creator or to make him appear young and to contradict the decree of the King of the Universe” [10]. It is important to consider the Tzitz Eliezer’s view, however, most poskim are lenient to allow cosmetic surgery when there is a genuine need for it.

Acknowledgements

I would like to express my gratitude to my family for their endless love and support. For constantly motivating me to do my best and accomplish my goals. I would also like to thank Dr. Babich for his encouragement in writing this article and for helping me along the way.

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COVID-19 and the Jewish Community: The Benefits of Orthodox Judaism in a Global Pandemic

Shani Axelrod

In the 21st century, technology is constantly advancing. SARS-CoV-2, the novel coronavirus, spread quickly to become a global pandemic threatening the lives of people across the world. The rapid dispersion of the COVID-19 crisis has caused governments to enforce quarantines, resulting in greater threats to mental health. Studies have found levels of anxiety, depression, and panic disorder to be rising in this period, with healthcare workers, those infected, and those at higher risk of infection experiencing greater risks of mental disorders. The Orthodox Jewish population in America has been hit particularly hard during the pandemic, being in tightly knit communities with many opportunities for community transmission. Religious faith and institutions though, have proved to be a method of mental coping with physiological benefits during the outbreak. Globally, individuals have become more interested in faith as a means of weathering the storm, with Google searches for the word “prayer” at an all time high by March of 2020. Religion confers the ability to find meaning in all aspects of life and thus reframe stressful occurrences, while granting social support and engendering gratitude. Moreover, strong faith in Gd has been correlated with lower levels of anxiety and distress, specifically among Jews [1]. The current COVID-19 pandemic illustrates the benefits of religion, particularly amongst Orthodox Jews during such crises.

Orthodox Jewry has faced pandemics in the past, and developed means of coping through periods of rampant disease. Plagues pervaded daily life in Jewish communities from the 1340s to the 1720s. In 1713, the Jewish community of Prague was hit particularly hard with an outbreak of the bubonic plague, likely because of their cramped ghetto living. The question of how Jews made it through this plague is one that has relevance and similarities to the religious response to COVID-19. One of the crucial tools in dealing with the crisis was rabbinic responsa related to questions that arose during the pandemic. Some were centered around religious obligations, such as having

children during the plague, while others dealt with Jewish burial and mourning [2]. The precedent for such religious guidance in health crises continues to the present day, as community leaders take part in maintaining the spiritual and psychological health of the people.

The role of rabbinic responsa in crisis continues to play a crucial role in ensuring the physical and mental wellbeing of Orthodox Jews. During the current pandemic, the Rabbi Jacob Joseph School published the Journal of Halacha and Contemporary Society Number LXXV with a focus on COVID-19. The content ranges from the laws of praying at home to using the mikvah, all in the hopes of ensuring the safety of Orthodox Jews while maintaining a meaningful connection to religion. Many rabbinic authorities emphasize the importance of wearing masks and taking all possible precautions to protect individuals and others around them. Other halachic responses relate to the emotional wellbeing of individuals, with the goal of protecting mental health during times of crisis [3]. Halacha is part of a toras chaim-- a Torah that is alive and offers answers to whatever new challenges arise. For generations, the Torah provided a beacon of guidance to the Jewish people, and continues to do so throughout the current pandemic.

One of the hallmarks of Orthodox Judaism is its emphasis on Chesed, kindness, spurring individuals to follow religious obligations and help others suffering through a pandemic. In the current crisis, several initiatives were created with the aim of helping fellow Jews. A group of Hasidic Jews created the WellTab, a tablet computer that enables patients to video conference from hospital rooms to family and friends at home. These tablets were given to over 1800 patients, with 60 volunteers ensuring their smooth running. Another organization, Kosher19, was created to deliver kosher food to healthcare workers on the frontlines of the pandemic. To these healthcare providers, the food served as both a physical and emotional comfort,

allowing them to continue the vital work needed in overloaded hospitals and clinics. Project Driveway, another organization, uses volunteers to deliver grocery shopping and other goods to those confined to their homes. For many elderly and immunocompromised individuals, the service was a literal lifesaver by protecting them from the virus outdoors [4]. The Orthodox community is instilled with such values that enable these services. At a time when social isolation was mandated, the virus somehow brought Jewish communities closer. Jewish unity became more commonplace as secular and religious Jews joined together in distributing food and medicine, and defending their communities against anti-Semitic blame for the pandemic. Such unity provided a great advantage of emotional and mental support that others who did not belong to such a community lacked [5]. In essence, the values of everyday Jewish life, such as kindness, compassion, and love, has trained individuals for this occasion where they could now provide much needed emotional and physical support.

A Pew Research Center study found that during the pandemic, even as houses of worship were shut down and the death toll rose, religious faith in the US increased. 24 percent of adults said that their religious faith was strengthened, and only two percent of respondents answered that their faith had decreased [6]. Several studies have found a positive correlation between religious involvement and immune function. Lowered cytokine levels and improvements in immune function results in increased resistance to infection. Moreover, research has shown that individuals battling cancer or viral infections have increased immune function when they are involved religiously. While no studies have been done in the area of the COVID-19 virus, previous findings have shown that religious activity corresponds to lowered infection rates, less viral load while infected, and less detrimental effects of the virus later on. An earlier study found that those with viral infections and spiritual intervention had a better functioning immune system than others who lacked such activities [7]. Studies have found that spirituality strengthens host resistance, while preventing mental disorders such as anxiety and depression, which weaken the immune response and intensify illness. In addition, religious congregations provide for social support with leaders offering consolation and guidance [8]. In the face of current challenges, faith offers resilience

that is helpful in fighting the mental and physiological effects of a pandemic.

Several studies have attempted to examine the effects of COVID-19 and the Orthodox Jewish community. One such study focused on the first quarantined community in the United States, which was a sample made up of Modern Orthodox Jews. The study sought to examine the psychological impact of quarantine, particularly in the area of anxiety. Of the 303 respondents to the survey, most identified religion as a significant part of their life, and described an overall rise in anxiety and distress. 50.2% of participants responded that a stigma of COVID-19 in association with the Jewish community was a significant fear, which predicted higher levels of anxiety. Respondents were also asked about their trust in information sources regarding the pandemic, and most responded that they completely trusted religious institutions over any other source. Participants described the support they received as a community in the areas of food delivery, religious services, and social support. 40.6% referenced support in basic needs such as food delivery, 25% related social support especially including phone calls to the elderly, 18.75% referenced informational support, and 12.5% referred to opportunities to remain connected religiously. Participants related that the ability to attend virtual study groups and life cycle events helped them cope in quarantine. The study showed how institutions of religion during a pandemic can be crucial to the mental health of congregants. Furthermore, the researchers concluded that public health can benefit from partnerships between religious leaders and health care, with the goal of spreading information to prevent the spread of infection [9].

Another study aimed to explore exposure, religiosity, and distress among Orthodox Jews during the COVID-19 pandemic. The study reviewed motivations for religiosity, religious coping, and trust in Gd among the participants. The level of exposure amongst the sample was particularly high, with 48% responding they had been in contact with someone with COVID and 20% who had it themselves. Results from the study indicated that greater levels of intrinsic religiosity were correlated with less negative effects of the pandemic, including the realms of family, religious observance, diet, and sleep, as well as higher levels of reporting positive effects of COVID-19. Religious coping and trust in Gd were also associated with more

positive impacts of the pandemic, as well as less negative effects. A lack of positive religious coping and trust in Gd was strongly correlated with negative impacts of the pandemic. During times of uncertainty, intrinsic religiosity provides resilience, while trust in Gd offers feelings of a sense of purpose and places control of life events in a benevolent Being. Religious coping refers to the social support and activities that have been shown to correlate with better mental health overall. Additionally, the researchers suggest that large Orthodox families and communities during quarantine act as a buffer against negative emotional impact. While responses indicated that family size correlated with higher work stress, it was also correlated with greater life enjoyment and positive impact [10]. The study supports the idea that greater levels of faith and religion during a health crisis can promote resilience both emotionally and mentally.

Acknowledgements

I would like to express my appreciation to Hashem for granting us the gift of the Torah and our health, and all the goodness that comes along with it. I would like to thank my parents for supporting me and my education every step of the way. I would like to thank Dr. Babich for providing me with resources and support for this manuscript and for teaching me about the wonders of the human body.

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Living in Precedented Times: A Closer View into Past Pandemics in the Bible and Talmud

Deborah Coopersmith

Contagious epidemic diseases have been a major problem to public health for centuries. In 430 BCE a plague in Athens killed around 100,000 people, in the 14th century the Black Plague killed an estimated 25 million people and during the 1918 Spanish Influenza 50 million people died [1]. Nevertheless, preventative measures were taken in all these plagues. It is only recently, with the awareness of microbiology, that the preventative measures have a firm scientific basis. Within the Bible and Talmud there are multiple instructions and regulations given during epidemic times to prevent and control the spread of disease.

There are several choice words that appear when discussing contagious diseases. Dever appears in the Tanakh 49 times and is translated to a lethal epidemic disease. It is a general term and could be a plague that affects humans or animals. The word magephah is used 23 times and the word negef appears seven times and both are synonyms for dever. The interchange of these words is seen in Samuel II chapter 24; the disease is called dever and then shortly afterwards called a magephah. Dever, magephah and negef refer to a highly deadly pestilence brought about naturally or by God [2].

There are specific plagues mentioned in the Bible and Talmud. In Samuel I 5:6 there is a disease called the ophalim; looking at the specifics of the disease, researchers assume it to be the bubonic plague [3]. Askera is another epidemic mentioned in the Bible and Talmud. Scientists have determined askera to be diphtheria [4]. In Psalms 63:12, askera is mentioned to have silenced the king from rejoicing God, which is fitting as diphtheria causes the throat to swell and gradually covers the throat in a thick grey membrane. The victim either dies from suffocating to death or by the toxins released by the bacteria [5]. The Talmud's Sages argue that getting askera is one of the worst ways to die [6]. In Masechet Shabbat 33a, b, the Sages debate why someone would become sick with askera and they delineated what would be the worst sin to

transgress. In a different masechet, Rav Nachman states that Rabbi Akiva's 24,000 students who died in a plague died from askera [7]. The Talmud's Sages also believe that the spies who spoke badly of the Land of Israel died from askera [8].

The Torah places high regard for the well-being of one's life. There are numerous commandments that deal with protecting one's life and taking care of one's body. One is even permitted to transgress a commandment, excluding one of the cardinal three, if a life is in danger [9]. It is one's religious duty to ensure that they are safe and out of harm's way [10]. As a result, the Mishna grapples with defining an epidemic and dealing with it. The Mishna considers dever to be present in an area in which 500 people live and there are three cases of death in three days [11]. Both the Babylonian and Jerusalem Talmud specify that the deaths must be on three consecutive days or else it could be possible that the deaths are the result of food poisoning or some other non-contagious disease [12]. This was a very modern way of looking at the spread of disease as a dever is not defined by the number of dead, but by the rate it spreads. The Babylonian Talmud elaborates that in a town in which 1,500 people reside there must be nine cases of death in three days—the Sages were cognizant that bigger towns are more likely to have more deaths from non-epidemic causes and adjusted the numbers accordingly. This is unlike most recounts of ancient plagues where the writer or historian shared the number dead, but did not compare it to the population size [13].

The word dever has different significance depending on the word it is associated with. Dever most often appears with the word herev, sword. There's a theory that this association is because these two concepts usually come together. Wars lead to famines and increased aggregation of people—which then leads to lack of nourishment, hygiene, sanitation and pandemics. Typhus and typhoid are both examples of lethal epidemics that have ravished a population after a war. Dever also

appears with the word *dam*, blood. Throughout Eze-kiel, it is written that *dever* and *dam* will pass through an area together [14].

There is also a biblical idea that a *dever* is a collective punishment. After King David took a census of the people without God's permission, God made him choose between seven years of famine, three months of war or three months of plague. King David chose three months of plague so God sent the angel of destruction to kill 70,000 people [15]. Through the way the text reads, it appears that *dever* is a punishment for all the people, not just King David.

It's important to note that while the Talmud's sages were concerned with why a *dever* was taking place, they also intricately understood how it spread. A *maka mehalehet* is a plague that spreads through exposure to people and no natural borders can prevent its spread [16]. In *Masechet Taanit 21b*, Samuel immediately orders his town to fast when he discovers a nearby town was overtaken by *dever*. People questioned him as to why there was a need to fast because there was considerable distance and even a river between the two towns. Samuel answers that this *dever* will not be prevented from reaching their town due to the natural boundaries. More practically, Samuel was aware that the commercial or tourist ties between the two towns would aid in the propagation of the epidemic—caravans frequently traveled between these towns.

Following this story, is the account of Rabbi Judah hearing of a deadly epidemic only affecting pigs and immediately ordering a public fast. The reason as to why he insisted on a public fast is debated in the Talmud and the Sages decide that Rabbi Judah realized that pigs and humans have similar gastrointestinal systems and, as a result, both species are susceptible to a disease affecting one of them [17]. Even within the Bible, there is recognition that humans and animals are vulnerable to the same plague. One of the 10 Plagues given to the Egyptians was *Shehin*, now known to be anthrax, and it is written that it affected both man and beast [18]. It appears that knowing a plague could affect both humans and animals was common knowledge. Thucydides, an Ancient Greek Historian, wrote that the 430BCE Athenian Plague affected Greeks and animals alike. He explained that animals would become affected after touching or eating a corpse [19]. Virgil, a Roman poet in the first century BCE, also

described an epidemic that affected both humans and animals [20].

In order to prevent the spread of diseases, the Sages had a set of public health measures. This meant that the public was aware of the danger early on. Precautionary rules were shared with the public and there was rapid implementation of treatment and control. It is a rabbinic obligation to report a contagious disease to the authorities [21]. There is evidence that the reporting of contagious diseases was implemented in the two Talmudic stories shared earlier. Both Samuel and Rabbi Judah heard of the *dever* while it was still not affecting their people. The second measure was to warn the public; someone in the town would blow the *shofar* to alert the people of the danger. The next step was to share information about the disease and how to curtail its spread. As mentioned earlier, *dever* was viewed as a collective plague so that meant people would look within themselves to perform *teshuvah*, penitence. Public fasts were issued, *shofars* were blown and people limited their movement in a zone affected by the pandemic [22]. In *Bava Kama 60b*, the Sages advised people to remain at home during a plague. It was also mentioned that the 4th century Sage Rava kept his windows shut during an epidemic. It is even advised during an epidemic for a traveler to walk on the sides of the road instead of the middle. There were two reasons for this piece of advice: practically, the sides of the road are generally emptier than the middle so there would be less exposure to others and spiritually, during a pandemic the angel of destruction walked in the middle of the road so it was best to avoid the middle. There were even people who would flee a town that was ridden with a lethal disease. Rabbi Moshe Isserles, a prominent 16th century rabbi, writes that his commentary of *Megillat Esther*, *Mechir Yayin*, was written while fleeing an epidemic that struck his hometown.

There is much evidence that people in the Bible and Talmud were aware of epidemics and created public health measures to curtail the pandemics to spread. The ultimate aim was to save as many lives as possible through individual and communal measures. Public fasts were issued, *shofars* were blown and people remained within their family unit to warn others of the danger and work towards curtailing the disease.

Acknowledgments

I would like to thank my parents as their encouragement and support enables me to pursue my passions. I would also like to thank Dr. Babich for his support and guidance throughout my three years in Yeshiva University. I am incredibly thankful for everything he does. I would finally like to thank Ms. Claudette Mikhli and Ms. Carolina Cohen for sharing their passion for science and graphic design with me. It continues to propel me forward and open my eyes to a world of possibilities.

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Did King Saul Suffer from Bipolar Disorder I?

Talya Danzer

In a time of quarantine, isolation, and COVID-19, mental health has become an important conversation. One in five people suffer from mental illness; it is something that masses of people, regardless of their status or class, suffer from. Yet those suffering from mental illness often feel alone. Mental health issues have been prevalent for thousands of years and can be traced back to the Bible. One example is King Saul, the first king of Israel.

There are debates among historians and psychiatrists regarding the mental illness King Saul suffered from. The most probable, however, is bipolar disorder I. This psychiatric disorder is among the top 10 disabling disorders in the world. Bipolar disorder one has no singular cause, rather, it is caused by a blend of genetics as well as stress and brain function. Bipolar disorder I is defined by dramatic mood swings ranging from manic episodes of either extreme euphoria or irritability to depressive episodes of disparity and hopelessness [1].

The first recorded instance of a manic episode is seen in Samuel I, Chapter 11. Saul is now responsible for the people. When he sees his people are in despair regarding the men of Jabesh, Saul flies into a rage. He takes the yoke of oxen, cuts them into pieces, and sends them throughout Israel as a warning. He sends them as a threat that all must accompany him to battle.

In bipolar disorder I, a large component of manic episodes is risky behavior and grandiosity. In the manic state, the behavior to think properly, as well as clear judgment, is affected [2]. Saul's theatrical display of dominance and impulse here is an insight that Saul suffers from a mental illness. Additionally, studies suggest that bipolar disorder in adults is associated with aggressive behaviors [1], which Saul also highlights here.

In between manic and depressive episodes, there are often periods of normalcy as is seen by the peaceful

period of King Saul's reign. However, in Chapter 16, "an evil spirit from the LORD began to terrify him" (Samuel I 16:14). At this point, Saul spirals into a depressive episode. Saul had been rejected by G-d, ridiculed by Samuel, and distrusted by those he ruled over. King Saul is despondent and slips into a state of worthlessness. He even has difficulties doing his duties as king. His workers, noticing the dramatic shift in Saul's mood, suggest music therapy by a man named David. They inform Saul that "whenever the evil spirit of G-d comes over you, he will play it and you will feel better" (Samuel I 16:16). The use of music therapy in the times of the Bible is innovative and a popular example of a coping mechanism. Coping mechanisms are strategies used by individuals to help minimize their distress. In addition to the development of mood stabilizers and antipsychotic medications, music is still used to treat those diagnosed with bipolar disorder I. Some people who have bipolar disorder also utilize psychotherapy.

According to the Global Council on Brain Health (GCBH), music can stimulate various locations in the brain, including those involved in emotion such as the amygdala, hypothalamus, hippocampus, nucleus accumbens, cingulate cortex, and orbitofrontal cortex. Additionally, in tracking the neurochemicals generated when listening to music, the GCBH discovered that music stimulates the pleasure center of the brain, promoting better mental health [3]. Music therapy seemed to be King Saul's main coping mechanism. Whenever he was overcome by his depressive state, this "evil spirit" of G-d, David would play the lyre for Saul. As a result, "Saul would find relief and feel better, and the evil spirit would leave him" (Samuel I 16:23).

David was seen by the people as a man who could do no wrong. Not only did David help Saul whenever Saul was overcome with emotions, and David was successful in the military. After a military success by killing the Philistines, Saul hears women singing the words, "Saul has slain his thousands; David, his tens of

thousands” (Samuel I 18:7). Immediately, Saul gets jealous and the next day flips into a manic state. Since Saul did not employ his main mode of therapy, music, it is no wonder Saul was unable to calm down. Chapter 18 of Samuel I states Saul was talking in an unintelligible way and having racing thoughts. This, paired with his unusual amount of energy and mistrust, led to Saul’s decision to kill David.

Saul has three attempted murders on David with no success and decides to track him to the city of Naioth. In Naioth, Saul becomes overcome with euphoria. He strips his clothes and lays naked. For a king, this is unusual, but for someone with bipolar disorder in a manic state, this poor decision making is quite common. In this episode, Saul exhibits every sign of someone with bipolar disorder I. He is abnormally energetic, euphoric, has racing thoughts, and makes rash and careless decisions.

However, after this manic episode, Saul settles into a period of normalcy which ends with his fears that he has lost the spirit of G-d. Saul believes he is soon to be attacked by the Philistines. Therefore, Saul decides to have a woman raise Samuel the Prophet from the dead. Being that Samuel anointed Saul to the position of king, Saul looks towards Samuel as a mentor. He trusts in him and Samuel’s words hold a lot of weight in Saul’s heart. Therefore, when Samuel criticizes Saul, this disagreement triggers a depressive state. The lack of appetite, fatigue, and feelings of worthlessness overwhelm Saul.

In the next battle, these feelings of despair remain. Saul, having been wounded by archers, commands his arms-bearer to kill him with a sword. Upon his refusal, Saul kills himself with the sword. His suicidal ideations and plans that came into fruition are largely due to his mental illness. During the depressive period of bipolar disorder I, suicidal ideation or attempted suicide are common [4].

Although Saul states that he wants to be killed to avoid capture and ridicule from the Philistines, it can be hypothesized that Saul’s lack of treatment for his mental illness ultimately led to his demise. According to the National Institute of Mental Health, as many as one in five patients with bipolar disorder commit suicide [5]. Saul killed himself after he was unsure how to cope with his heightened feelings of failure and

distress. Rather than facing his injuries and risk being captured, Saul kills himself. He feels inadequate in his role as leader and he has lost everything: the respect of his people, his children, and the backing of G-d. He clearly felt that he had no other way out of his issues except for death.

Bipolar disorder one has no singular cause, rather, it is caused by a blend of genetics as well as stress and brain function. The use of music therapy in the times of the Bible is innovative and a popular example of a coping mechanism. Coping mechanisms are strategies used by individuals to help minimize their distress. In addition to the development of mood stabilizers and antipsychotic medications, music is still used to treat those diagnosed with bipolar disorder I. Some people who have bipolar disorder also utilize psychotherapy.

It is important to recognize King Saul’s mental illness. All his actions, such as bad judgment and out of control mood swings, were influenced by bipolar disorder. When his servants could not get his emotional state under control he committed acts for which he faced a lot of critique. However, in viewing King Saul through the lens of an individual suffering from bipolar disorder I, a lot of his actions make sense. For someone who started the kingship in a peaceful manner, the end of his reign was completely the opposite. Saul never discussed what he was enduring. He never informed people of his compulsions and strong bursts of energy that led to his poor decisions, or of the periods where he had no energy and was a danger to himself and others.

In Biblical times, kings were viewed as powerful and strong. Perhaps Saul did not want to contradict that image and lose his leadership position, or perhaps he truly did not recognize the battle ensuing in his mind. King Saul is labeled as a king who ignored G-d and further led his people off the path. He is seen as someone who was ultimately destroyed by his greed and jealousy. However there is so much more to King Saul than that. Saul was destroyed by the pressures and stresses he took upon himself as king and the mental illness of bipolar disorder I that plagued him until he took his own life.

Acknowledgments

I would like to thank my parents for supporting me in every aspect of my life, including my education. I would also like to thank my grandparents for always being one phone call away to help and guide me. Additionally, I'd like to thank Dr. Babich for being an incredible mentor and assisting me through every step of the article writing process. Furthermore, I'd like to thank Rabbi Yosef Weinberger from the Frisch School and Professor Moriah Rosensweig Weiss from Yeshiva University for reviewing the biblical content of this article.

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Living for a Millennium: Fact or Fiction?

Maayan Hirschhorn

In today's day and age, a person who lives until 100, lives a full life. Yet, only until recently have we been able to fathom such longevity. In fact, 200 years ago the average life expectancy of a typical male was a mere 47 years old. [1] This reality makes it very difficult to comprehend that people could have lived almost a millennium. We do see, however, that in the *Tanach* it is recorded that the first ten generations of humanity lived well over 900 years. For example, the longest ever recorded lifespan is attributed to *Metushelach*, who lived to the ripe old age of 969. Additionally, it seems that the first ten generations of humanity did not age, as some of them had kids very late in life. Male fertility usually decreases at age 45, yet *Noach* sired his children when he was 500 years old. How could this be?

This question perplexed many religious scholars and scientists for generations and, up until recently, it was very hard to offer a scientific rationale. With the growing interest in the science of aging, scientists discovered that human aging is not a result of the body wearing itself out, but the result of genes coding how long humans can live (excluding any environmental influences). Controlling those genes may be one of the keys to understanding longevity in the time of *Tanach*.

When human cells duplicate their DNA, their telomeres get shortened in the process. Telomeres are the ends of the coding sequence in DNA, and the enzyme telomerase is responsible for elongating the telomeres. If the telomeres are too short, the DNA will not duplicate, halting the cell's ability to replicate itself. In cancerous and stem cells, for example, the enzyme telomerase is activated, which allows the cell to duplicate itself indefinitely. In 1997, two scientists published an article called "News in Brief" in the *Scientific American* reporting that they discovered the gene that controls telomerase. These scientists claimed that controlling this gene could be the key to allowing cells to duplicate indefinitely, thereby allow humans to live forever.

Cells reaching their Hayflick (replicating) limit, however, is not the only reason why we age; therefore,

discovering the gene that controls telomerase is not convincing proof that humans could live indefinitely. Other researchers found that controlling different genes, besides for the gene that controls telomerase, can also prove that genes control longevity. Professor Tom Johnson of the University of Colorado discovered that by changing one gene, *age-1*, in the nematode worm (*Caenorhabditis elegans*) the average lifespan of the worm increases twofold [2]. Professor Michal Jazwinski discovered that integrating the *LAG-1* gene into yeast (*Saccharomyces cerevisiae*) not only increases the lifespan of the yeast, but allows the yeast to stay younger for longer and have offspring for a bigger range of years [3].

Professor Leonard Hayflick explains in his article *How and Why We Age* that there are some species that do not age at all, but only die because of external environmental reasons (i.e. something steps on them). He writes that "some animals do not age at all. If they do age, it occurs at such a slow rate that their aging cannot be demonstrated. Non-aging animals experience a peak in their physiological function at some point, but these functions do not seem to decline... non-aging animals do not live forever because of accidents, disease, and predation" [4]. For example, the Andean condor (*Vultur gryphus*) has been recorded to lay eggs at age 80 and show no signs of aging [5]. Living a long time and reproducing in what is conventionally considered an old age is not unique to animals, but applies to plants as well. For instance, bristlecone pine trees (*Pinus aristata*) live over 4,000 years, and yet every year they produce seeds that will eventually become new trees [6] [7].

How do we reconcile these scientific findings on the longevity of plants and animals with the fact that the average modern human does not generally live over the age of 100? When discussing what causes humans to die, *Rambam* writes that humans only die because of external environmental factors [8]. Natan Aviezer, author of the *The Extreme Longevity of the Early Generation in Genesis*, suggests that when *Adam* was created, he was created as the perfect man with an immaculate and immortal genome. The reason that *Adam* was immortal

was twofold: he had the perfect genome, and he was in the perfect environment. When *Adam* was in the Garden of Eden, there were no environmental factors that could cause him to die. However, once *Adam* left the perfect environment, he was exposed to an environment where he could be killed. Aviezer proves this by quoting a *pasuk* from *Bereishet* 2:17 where *Hashem* says that “as for the tree of knowledge of good and bad, you must not eat of it; for as soon as you eat of it, you shall die.” When *Hashem* says to *Adam* that he will die if he eats from the Tree of Knowledge he does not mean he will die immediately, but that being expelled from the Garden of Eden will thrust him into an environment where it is possible for him to die [7].

If this is true, and *Adam* had the perfect genome, why did the lifespan of mankind plummet after *Noach's* generation? There are three possible suggestions to resolve this problem. The first explanation is that after the *Mabul*, the climate of the world changed so much that it was less habitable for people, and therefore decreased human life expectancy [9]. However, the issue with this proposal is that the human life expectancy did not drop immediately to 120 from 900, but was a steady decline of longevity. If it was truly the environment that was the cause of the decline in human life expectancy, human longevity would have decreased immediately.

The second option is one that can be explained through epigenetics. In 1988, a study was conducted on a secluded population in the town of Överkalix in northern Sweden. Due to the town's remote location, the food supply for the year was completely dependent on the success or failure of the town's yearly harvest. If it was a year where less food was harvested, the people in this town would simply starve due to lack of resources. This study showed that the descendants of the people who went from living in a time of good harvest to that of one where there was a sparse harvest, lived on average six years less than that of the descendants of the people who lived through years of starvation and then transitioned to years where there was more food available. The study suggested that the genes that were necessary for living were not altered or removed from the people's genome, rather they were methylated and the genes were silenced [10]. Based on these findings, one can suggest that after the trauma of the flood, having to shelter in a boat for a year, and then the world being restored to its natural order *Shem*, *Cham*, *Yafet*, and their

respective spouses, each had vastly different reactions to these events. As a result, each survivor would pass on a genetic code that was individually methylated and subsequently coded for a unique longevity. As the generations progressed, more people married and therefore diluted the genes that code for over 900 years of life, effectively decreasing the longevity of each generation. This, combined with mankind's inability to control his environment and how he is affected by it, caused the life expectancy of the human population to decline [1].

The *Talmud* (Hagigah 13b-14a) suggests a third explanation. According to the *Talmud*, despite the fact that *Adam* had the perfect genome, he was not the first man to exist, and that 974 human generations existed before him. Because *Adam* had the perfect genome, his descendants separated themselves from the rest of mankind and married each other so that they could preserve the perfect genome and all live for as long as possible [11]. This is proven from *Cain's* fear seen when he is forced to wander the earth and cries “anyone who meets me may kill me!” (*Bereisheit* 4:14). The fact that *Cain* thinks that he can encounter new people for the first time proves that there are other people on the earth besides his family, who all already know who he is. After the *Mabul*, however, there was almost nobody left from *Adam's* family and his descendants started to intermarry with the tribes they found in the place that they landed after the flood (some sources say present day Iraq). As a result, the longevity of *Adam's* family decreased and was ultimately eliminated, and equalized *Adam's* descendants' longevity with that of the rest of mankind [12].

In *Sefer Yeshayahu*, *Yeshayahu* prophesied that when *Mashiach* comes, “No more shall there be an infant or graybeard who does not live out his days. He who dies at a hundred years shall be reckoned a youth, and he who fails to reach a hundred shall be reckoned accursed” (*Yeshayahu* 65:20). Many *mefarshim* explain this prophecy to mean that someone who dies at age 100 will be considered a teenager [13]. In *Tanach*, a teenager is considered to be 13 years old, so if a teenager is now considered to be 100 years old, that means that the human life expectancy multiplied by 7.7, making it about 923 years [14]. 923 is very similar to the life expectancy of those first 10 generations who were descendants of *Adam*, leading *mefarshim* to say that when *Mashiach* arrives, humankind will go back to living the lifespan of *Adam* and the 10 generations after him [14] [15].

The fear of death is what allows human beings to live their life to the fullest, and one has to wonder: is living for a millennium something one should strive for, or something that we should be thankful was eliminated generations ago? Only time will tell.

Acknowledgements

I would like to thank my parents, Yaron and Ayelet Hirschhorn for continuously believing in me, and constantly investing their time and effort in me. Without them I would not be who I am today. Additionally, I would like to thank Dr. Babich for helping me with this article, and for continuously infusing Torah into his genetics classes, showing me that the two can always work hand in hand.

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DNA Analysis of the Bene Israel Jews

Talya Markowitz

“You shall not intermarry with them: do not give your daughters to their sons or take their daughters for your sons” (Deuteronomy 7:3). The Torah specifically warns us against intermarriage and assimilation to ensure the purity of the Jewish people. In order to accomplish this, it is essential for every Jew to marry a person who is halachically Jewish.

The Talmud emphasizes that one’s Jewish identity is dependent on the Jewish identity of his mother. If one’s mother is Jewish, that person is thereby Jewish as well, as it says “Rav Yehuda continued his recounting: When I said this halakha, that there is a concern about the betrothal of gentiles nowadays, before Shmuel, he said to me: One need not worry about this, as your son from a Jewish woman is called your son, i.e., he inherits his lineage from you, and your son from a gentile woman is not called your son, but rather her son. Consequently, all children born to Jews from gentile women are not considered Jews, as their lineage is determined by their gentile mothers” (Yevamos 17a).

Determining one’s Jewish identity is crucial, especially since multiple Jewish Diasporas over thousands of years have scattered Jews all across the world. Groups of people that have been isolated for hundreds of years around the world are now attempting to prove their Jewish identity. “Bene Israel” and other small groups from India claim to be descendants of Jews who migrated there during the time of King Solomon [1]. While these groups in India claim Jewish descent, they lack a concrete history of their arrival in India, thereby allowing for speculation of their Jewish ancestry. Although Rambam mentions the existence of Jews living in India in a letter dated approximately 1200 CE, it is unclear if the modern-day community descends from these Jews [2].

A possible way to ascertain the heritage of these groups in India is to analyze their DNA. DNA is a person’s history book, as it was inherited from parents, who inherited it from their parents, and so on. Cellular

DNA is located primarily in nuclear chromosomes, which are inherited from both parents, and from mitochondrial DNA (mtDNA), which is a circular, double-stranded DNA inherited primarily from the mother through the egg. Through the analysis of mtDNA from this specific Diaspora group, their matrilineal descent was examined to determine their lineage. These studies compared the DNA of these groups in India to the DNA of Jews from surrounding regions with similar non-Ashkenazi descent. Prior research showed that most Jewish Diaspora groups have genetic information connecting them to Middle East origin, however, the groups from India lacked this similarity, thereby casting doubt as to their Jewish lineage [3].

mtDNA was examined to determine whether the groups from India originated from women who were part of the ancient Jewish community. One study showed that mtDNA obtained from the groups in India did not resemble the Jewish mtDNA genome. Rather, their mtDNA was more similar to the native Indians of their region than to mtDNA of Jews of non-Ashkenazi descent [3]. This strongly suggested that the groups in India were not of Jewish descent. Although analysis of mtDNA from the community in India implied that their descent was mainly from the local Indian gene pool, there was some indication of admixture with Jews. The Indian community’s dominant mtDNA was Hg M5a2, a DNA signature from the Kerala (a local region in India) gene pool. However, there was a small fraction of their mtDNA, primarily from the “Bene Israel” group, that belonged to the sub-Hgs H13a2a1 and H14 genotype, which are DNA sequences found in many Iraqi and Iranian Jews. Not only did some of the mtDNA collected from the groups in India share these DNA sequences with Iraqi and Iranian Jews, but some of the mtDNA samples also contained signatures seen in Italian Jews and other Jews of non-Ashkenazi descent, not present in the local Indian gene pool, which genetically relates the group of people in India to ancient Jewry. [4] This creates a conflict with previous results that concluded with the

Bene Israel not having “Jewish DNA”, thereby creating a halachic disagreement of whether or not using the mtDNA is enough the Jewishness of the Bene Israel.

Jews have been scattered across the world after the destruction of the first and second Temples, in locales which developed into thriving Jewish communities and to places which were unable to maintain an active orthodox Jewish lifestyle. As time progressed, these latter groups of people may have mixed with the indigenous population, thereby diluting their claim of belonging to the Jewish people today. However, regarding the communities from India, their identification with the Jewish people is significant and their situation is similar to that of many Ethiopian Jews. Upon meeting the necessary halachic requirements, these communities would be accepted and welcomed into the Jewish nation.

Acknowledgments

I would like to thank my parents for always supporting and encouraging me in my endeavors and for allowing me to further my education in Stern College for Women. I would also like to thank Dr. Babich for giving me this amazing opportunity and for helping me along the process.

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Can the Concept of Reproductive Cloning Become a Reality within the Realm of Halacha?

Danielle Pasternak

In the 21st century, technology is constantly advancing. The concept of reproductive cloning was an intangible concept, until Dolly, a female sheep, was cloned. Dolly was cloned from an adult somatic, or body cell, by way of nucleus transfer via cell fusion. Reproductive cloning involves the removal of the nucleus from an egg of an individual (i.e., enucleated cell donor) and fusion of this with a terminally differentiated donor somatic cell (i.e., the nucleus donor). The fusion of these cells gives rise to a single cell which functions as a zygote. The dividing zygote is maintained in a Petri dish producing an early embryo, which is implanted in a surrogate to carry to term. The resultant clone has the identical nuclear DNA as that of the donor nucleus cell. When Dolly was born, her DNA was identical to that of the donor sheep, proving that cloning was now a reality [1].

Three components that are needed for a clone to be viable: the enucleated egg cell, a terminally differentiated somatic cell, and a surrogate to carry the embryo to term. These two fused cells behave as a “zygote” and eventually divide to produce an embryo, which is implanted into a woman’s uterus until the clone is ready to be born. This process has a maximum of three participants, one for each component. A minimum of one participant is possible, if a woman clones herself, and uses her own enucleated egg cell, her own somatic donor cell, can carry the fetus to term. Or, reproductive cloning can involve two participants, a female who supplies her enucleated egg and her donor somatic cell, with another female serving as the surrogate. A combination of individuals is possible with reproductive cloning of a female; a woman can conceive without any donors or have one or two donors. If a man wanted to clone himself, he would use his somatic cell and an enucleated egg from a female; the surrogate may be the donor of the enucleated egg or another female.

Since reproductive cloning is a modern technological advancement, there are many halachic issues that arise and that must be addressed. For example, despite ethi-

cal concerns, can a human be cloned in order to be a donor for organ transplant? Who is the clone’s mother and father when more than one person is involved in the process? While the answers to these questions are not black and white, this paper will analyze the possible answers and reasons behind how halacha interprets cloning.

There are those who may think that creating a clone is creating a human being, which seems G-dly. However, only Hashem can create something from nothing, and creating a clone is not a new creation since it requires previously created cells [3].

At the moment, many countries have banned experimenting human cloning since it is highly problematic due to issues regarding immortality, the psychological health of the clone, the lack of genetic diversity, and the high rates of error and human suffering [2]. Another reason why human cloning may not be ethical is because it would allow people to “gene shop” or choose genes, features, and characteristics they want in their child. Human cloning would also allow groups of people to clone themselves, which would remove the concept of individuality and uniqueness [3].

One reason that cloning is beneficial is to supplement organs for organ transplants, but there are still ethical considerations on this topic. Tissue, organ, and cell cloning for therapeutically purposes is beneficial to society, but human cloning is not [4]. Because clones have identical DNA to that of the donor, such clones could serve as a reservoir for organ transplants if needed by the nucleus donor. Essentially, the clone would not be treated as a normal human being, rather as an organ source, possibly leading to mistreatment of the clone. An alternative would be cloning tissue and organs alone that are genetically identical for transplantation rather than a full human [5].

In Leviticus (19:15) it states “*lo ta’amod al dam re’echa*” which translates as “Do not stand idle when your fel-

lowman is in danger.” This teaches that we must do whatever is necessary to save the life of those who are in danger. Everyone has the obligation to save those who are ill - the Torah even teaches that one can violate Shabbat if someone’s life is in danger. Allowing the option to clone tissues and organs to be used in a transplant for those who cannot find a genetically identical match, would allow individuals to partake in the mitzvah of saving one’s life. Perhaps, this would obligate society to clone for the sake of saving one’s life since the donor would be a genetic match, negating any complications.

Another reason why human cloning might be considered in the case where a family is experiencing issues of infertility, such as if the man’s sperm is not viable. Human cloning could use the male’s somatic cell as the nucleus donor and the female enucleated egg cell with her mitochondrial DNA, thereby letting both be part of the process, rather than using a sperm donor [2]. The Gemara (*Kiddushin* 30b; *Niddah* 31a) states that there are three partners in creation of a human being: Hashem, a man, and a woman. Reproductive human cloning to produce offspring could result in the father’s role in creation to be negated [5]. While the above is true, human cloning to produce offspring may be halachically more suitable than IVF, because there would be no need to collect sperm, which some opinions hold as a violation from the Torah of *hotza’at zera levatalah* [3].

As is known, multiple people can be involved in the creation of the clone, resulting in the question of who the clone’s family is according to halacha. As stated in *Kiddushin* (69a), the gestational mother who birthed the baby would be the clone’s halachic mother, yet few argue that the halachic mother would be the one who supplied her DNA. There is a minor opinion that says that it is possible for a child to have two or three mothers and no father according to halacha, the surrogate mother, the mother who gave her the enucleated egg, and the mother who supplied her the somatic donor cell [6].

When it comes to who the father is, if there was no man involved in the cloning process, there is an option that either there is no halachic father, similar to the case when the genetic father is not Jewish. Or, perhaps, there is a female halachic father - the donor of the terminally differentiated female somatic cell. The

halachic father is the person whom the DNA has been taken from (i.e., the somatic cell donor) whether this person was a female or male [7].

Although the concept of cloning still may appear strange and foreign, the Maharal noted that human creativity is a natural part of this world. In addition, we have the mitzvah of , or conquering the world, to make it better for humanity, which reproductive cloning can allow. Technology is always evolving and advancing, which introduces ethical and halachic questions and concerns. Hopefully, when the time is right, society will have all the answers to these questions and be able to provide medical care and successful organ transplants and donations.

Acknowledgements

I would like to thank my parents for their constant encouragement and for allowing me the opportunity to study in a Torah U’Maddah environment at Yeshiva University. I also want to thank Dr. Harvey Babich for his tremendous help and support in writing this article. Next, I would like to thank Rabbi Kalman Laufer, for reviewing the Torah content of my article. Lastly, I would like to thank Hashem, since none of the above would be possible without Him.

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Does Living an Orthodox Jewish Life Lower the Risk of Developing Obesity?

Malkie Rubin

In Orthodox Jewish literature and *Tanakh*, there are contrasting views about obesity. In the *Tanakh* and the *Midrash*, there are stories of regular people and Rabbis who had trouble controlling their weight. It is interesting to analyze contrasting views of whether an Orthodox Jewish lifestyle can enhance the occurrence of obesity or whether *halakhic* laws can help with weight control. Overall, living an Orthodox Jewish lifestyle and following *Halakhah* (Jewish religious laws) can help lower the incidence of obesity.

In the second book of the Pentateuch, an incident is noted in which Pharaoh had a dream in which he visualized seven fat, healthy cows that subsequently were devoured by seven cows described as “ill-favored and lean-fleshed.” Upon awakening, he wondered about the meaning of the dream. From this dream, one discerns that obesity was considered to be healthy. Fullness of flesh, at least for cattle, was a sign of health while leanness was a sign of disease. In the book of Judges, we encounter Eglon, King of Micah, who subjugated the Children of Israel for 18 years. Eglon, an extremely obese man, was assassinated and murdered by a young hero named Ehud. Upon approaching Eglon, Ehud withdrew his sword and pierced the belly of King Eglon. The text noted that Eglon’s belly fat closed upon the blade so that Ehud was unable to withdraw the dagger. Apparently, while cattle obesity is positive, for humans, it is a detriment.

Despite current knowledge of a genetic predisposition to obesity, we tend to associate overeating with a lack of self-control. This element of self-discipline is featured in *Talmudic* lore. For example, it was considered vulgar to eat in the street. Uncontrolled hunger, perhaps related to bulimia, is referred to repeatedly in the *Talmud*, both in the description of cases and in the prescribed treatment. Several sages suffered from episodes of bulimia and others had trouble with their weight.

An interesting story is told in the *Talmud*. Both Ishmael ben Yose, who was active at the Academy of Sepphoris in Galilee, and his contemporary, Rabbi Eleazar ben

Simeon, were very overweight. Perhaps an exaggeration, the *Talmud* noted that a pair of oxen could pass under their juxtaposed bellies without touching them. The sages noted that, as compared to them, their wives were even more overweight. [1]

Rabbi Eleazar ben Simeon was the son of Rabbi Simeon bar Yochai. According to some *Talmudic* sources, both father and son fled from the Roman authorities and hid in a cave for 13 years, eating only dates and fruit. Such a diet does not promote the accumulation of fat, although Rabbi Eleazar could have developed obesity in his later years. Rabbi Eleazar ben Simeon is also mentioned in the *Midrash*. Rabbi Eleazar eventually required an operation to rid himself of his extra fat. He was given a potion and brought to a marble house. His abdomen was opened and many baskets of fat were removed. This may be the first reported case of liposuction. [1]

So what does *halakha* (Jewish religious laws) say about the quantity and quality of food consumed by a person? In Rambam’s *Hilchot Daot*, Chapter Four, it notes that “One should not eat until his stomach is full. Rather, he should stop when he has eaten too close to three-quarters of satisfaction. One should not eat until he has checked himself thoroughly that he does not need to relieve himself.” This indicates that a person is obligated to eat only to be satisfied and not more than necessary.

The Rambam, who was a renowned doctor and philosopher, continues that if one exercises, does not eat to the point of satiation, and has loose bowels, he will not suffer sickness and he will show strength, even if he consumes harmful foods. If someone does not exercise or is constipated, he will be full of pain even if he eats the proper foods. The Rambam goes on to say that whoever conducts himself in this way is guaranteed not to be ill throughout most of his life until he reaches an advanced age and dies. His body will remain intact and healthy throughout his life and he will never need a doctor. [2]

Jews have been associated with obesity since at least the nineteenth century when they were called the “diabet-

ic' race" in an attempt to classify them as inferior. The association between Jews and diabetes originated among European physicians and continued in the United States in the early 20th century. During that time there was a significant focus on "race-based medicine" and the Jews' high rate of diabetes was generally agreed upon. [5] Israeli data confirmed the high risk of obesity in the Orthodox Jewish community. The Israeli Health Ministry reported that Israeli ultra-Orthodox Jews were seven times more likely to be obese than the rest of the population. The suspected culprit is their lack of physical exercise. Other contributing factors include a lack of practical health education in *Haredi* schools, which leads to the consumption of less expensive simple carbohydrate-based foods and the consumption of high-fat meat, rather than more expensive complex carbohydrate and protein-rich foods. [4]

Studies show religious Jewish adults tend to be more obese than secular Jewish counterparts. In "Weighing In on Obesity in the Frum Community", Shira Isenberg cites a study conducted in Northwestern University that was published in the American Journal of Preventive Medicine and followed over 2000 adults for eighteen years. Isenberg found that those who participated in religious activities were 30 percent more likely to be obese than those who were uninvolved with religious activities. [3]

In 2011, in a study by Maureen R. Benjamins and Steven Whitman, published in the Journal of School Health, the researchers reported that 28 percent of Orthodox Jewish children were overweight and an additional 26 percent were obese. [6] An earlier study in 2006 showed an alarmingly high rate of obesity among 201 adults and 58 children in an Orthodox Jewish Community in Chicago. The rate of obesity and overweight among adults was comparable to that of a general population, respectively, 24% and 58%, but the rate of obesity for children was twice the rate of the general population, 26% compared to 13%. [5] There is little time to fit in health education for children in Jewish day schools. They have increasingly long days as opposed to their secular school counterparts due to their dual curriculum of both secular and Jewish studies. These families were on limited budgets and the parents had limited available time to be able to attend meetings and educational forums or to read literature on healthy living. The study developed a plan to overcome these

obstacles and to create and implement a culturally appropriate wellness program in Jewish day schools. [6]

One possible explanation for the increased risk of obesity is the overwhelmingly busy nature of an Orthodox Jewish life. Dr. Mendel Singer, an associate professor of public health at Case Western Reserve University and director of the Jewish Community Health Initiative, described how making time for activities, like exercise, is very difficult for religious people: "*Frum* women's lives are overwhelming. And the men are always being told they need to be learning every minute. When and where do you exercise?" While the commandment to protect one's health is often quoted: "*Veshemartem meod lenafshoteichem*" (*Devarim* 4:15), bodily fitness and exercise are not as often stressed by Rabbis. Additionally, Parents often do not stress health and exercise for their children and religious day schools fall short on creating health programs. [3]

Another possible explanation for the increased risk of obesity is the emphasis on food at religious events. Obesity is a problem not just for the Jews, but it is for the whole world as well according to data from the CDC. According to the Centers for Disease Control and Prevention (CDC), in 2012, nearly 36 percent of American adults were obese. As of 2010, every state had at least a 20 percent obesity rate and twelve states had a rate of 30 percent or higher. In America, the Orthodox Jewish lifestyle has led many into a dangerous cycle of overeating and indulgence. Every Shabbos, religious Jews are required to consume three, often elaborate, meals. In addition, there is a specific *mitzvah* to eat a third meal on Saturday night, termed "*melaveh malaka*". Rabbi Shmuly Yanklowitz, president of Uri L'Tzedek and director of Jewish Life 7 Senior Jewish Educator at UCLA Hillel, in an article discussing whether there is an obesity problem in the Orthodox Community in 2012, explained that it is his belief that long term health of Orthodox Jews is in jeopardy due to the consumption of an abundance of food. ([4])

A study conducted in 2015 analyzed the American Orthodox Jewish community's calorie intake on the Sabbath and its contribution to overweight and obesity. On the Sabbath, there is a religious requirement to consume three meals, with each meal including a minimum amount of bread. The meals are larger and more elaborate than during the rest of the week, and the

bread, called *challah*, is usually fresh and consumed in larger quantities than bread at a meal would otherwise be. Rambam, a leading Rabbinical authority who lived during the twelfth century and was a prominent physician, encouraged eating “fatty food” on the Sabbath that is better in quality and larger in quantity than during the rest of the week, but he also discouraged overeating during the weekdays and encouraged frequent exercise. Typical examples of foods eaten by American Orthodox Jews of Ashkenazi descent are foods of their Eastern European ancestors which tend to be very high in fat and carbohydrates. These foods include potato kugel (shredded potato baked in large quantities of oil), schnitzel (fried, breaded chicken breast), and a hearty beef stew called cholent. It is also common for synagogues to offer candy to children every week, and to have a “*kiddush*” following the Sabbath morning services that includes a large amount of food. Exercise is also forbidden on the Sabbath unless the activity itself is enjoyable, which also probably contributes to Orthodox Jews’ significant weight gain over the Sabbath. Also, almost all holidays and celebrations in the Orthodox Jewish community are accompanied by large meals and high-calorie desserts.

In a 2015 study, twelve married or previously married women who identify themselves as Orthodox Jews were recruited to do 24 hours food recalls over the phone. The participants were divided into three weight groups (normal, overweight, and obese) based on their BMI. The overweight and obese participants’ data were combined into one group for purposes of statistical testing. Paired t-tests looking at the data for all participants showed significantly greater caloric intake during an average Sabbath day than an average weekday. A repeated-measures ANOVA test showed significantly greater energy intake on the Sabbath for the overweight-obese women compared to the normal-weight women. These results support the hypotheses that all groups eat significantly more on the Sabbath than on weekdays, and overweight and obese individuals eat significantly more on the Sabbath than normal weight individuals. This supports the theory that calorie intake on the Sabbath is a contributing factor to overweight and obesity within the American Orthodox Jewish community. [5]

After a community health survey revealed unusually high levels of childhood obesity in the largest Jewish community in Chicago, a 2-year school-based intervention was designed and implemented. The investigation

was created to address the high levels of childhood obesity within the most densely populated Jewish community in Chicago in 2003. Two schools were chosen to implement this pilot study. The researchers provided health education in these schools by having a health food section in the cafeteria, posting nutrition information in the cafeteria, or adding health-related tips. To implement this program, the schools were also given a \$10,000 grant. One school used the funds to purchase bicycles and other sports equipment to encourage physical activity. The other school used the money to pay for a bus to transport students to the Jewish Community Center (JCC) for swimming. The schools also eliminated the soda vending machines and tried to make the school less food-oriented. Also, parents were encouraged to be involved and to help their children eat healthier.

The results were analyzed by having all students in grades 1-8 fill out a survey, which used pictures and simple questions to measure eating habits and intentions, nutritional knowledge, and attitudes related to physical activity. After this intervention, the study found that older students were significantly more likely to get an hour or more of physical activity most days of the week. Yet, the selected measures of environmental changes showed little improvement. Overall, the results of the study showed that having a health education program did not significantly alter the obesity epidemic in children. An expansion of the current project to more schools and increased duration may help determine why the findings of the pilot study were inconsistent. [6]

One possible solution the Northwestern study highlighted was that for religious people who participated regularly in religious activities, places where they congregate for spiritual endeavors can become forums for emphasizing the importance of health. Synagogues can be the place for transmitting health and nutrition information, hosting health fairs, and for lectures by health-care providers. Mindful eating can also help improve a person’s health without dieting. We are taught as youngsters to make a *bracha* to thank *Hashem* for the food we eat. Mindful eating helps bring to attention the gratitude we should feel to our Creator. It teaches one to slow down and be aware of everything about eating. If you only eat mindfully, you will be able to reduce unwanted calories from automatic eating and will feel satisfied more quickly, leading to weight loss. Research shows mindful eating training may be an effective

therapy for people who struggle with binge eating. It is crucial for religious individuals to be able to maintain a healthy lifestyle, to eat wholesome foods, and to be involved in physical activity. [3]

On the other hand, two researchers Gluck and Geliebter compared the self-image of Orthodox Jewish and secular Jewish women in the United States. Secular women were more likely to have a fear of becoming obese and more likely to be influenced by issues related to weight than orthodox women. In 2007, researchers Latzer, Tzischinsky, and Gefen found that the more religious the student, the less eating-related psychopathology was noted. They suggested the level of religiosity might protect adolescent girls from developing an eating disorder because of lesser emphasis on the physical attractiveness of women and less pressure for their academic success. Another explanation was that the more religious someone was, the more she valued modesty over external beauty. [7]

Halakhah has a system of *kashrut* (kosher laws) that dictate what foods are permitted to eat. Also included are laws of when to eat and how much to consume. *Halakhah* also has laws that require the individual to recite blessings before and after the food is consumed and requires an additional blessing after a meal eaten in the company of others. Rav J.B. Soloveitchik wrote: "The *Halakhah* is aware of the fact that a meal partaken together unites people, fosters friendship, and fashions a company of eaters that may, in the long run, become a community of God-seekers and the God-committed." Having a meal with other people fosters friendships and allows people to be more mindful of what they are eating. Rabbi Hanniah ben Teradion, a *Talmudic* sage, said: If two people sit together and no words of Torah are spoken between them, then their session is scornful. But if two sit together and words of Torah are spoken between them, then the Divine presence rests on them. [7]

The *Pesach seder* has its own unique rules regarding food consumption. *Halakhah* requires that one approaches the *Pesach seder* with an appetite and to not eat past the point of satiety. Researchers Latmer and Wilson found that individuals with bulimia nervosa and binge eating disorders show a disturbed satiety response. The *Halakhah* requires an awareness of satiety. Even though the Passover sacrifice was to be eaten quickly in commem-

oration of the exodus from Egypt, it was to be eaten only up to the point of satiety and not beyond, because if someone eats past satiation, it is considered vulgar. Similarly, the Torah forbade breaking the bones of the Passover sacrifice since only a ravenous person would devour the leftover bones at a meal. One is not allowed to eat after finishing the *Afikoman* since, at that point in the *seder* meal, a person should be satiated. Eating as a free person, not as a slave in Egypt, requires us to recognize satiety and to withdraw from eating when no longer hungry. [7]

It is interesting that characteristics of disordered eating - lack of appetite, disturbed satiated response, withdrawal from community, and decreased spirituality - are inversely correlated with the *halakhic* requirements of eating a meal. The great sage Hillel explained that we must take care of our bodies because we are created in the image of G-d. Rav Kook suggested that exercise is a *mitzvah*. Also of concern is the prohibition of *achilah gasah* (overeating). By learning to eat in moderation, improving our diets, and taking care of our bodies, we are fulfilling the *mitzvah* of preserving our lives and we also teach our children the importance of living a balanced holy lifestyle. [4] The Ramban, a philosopher, codifier of Jewish law, and court physician to Sultan the Great, described that gluttonous eating was deadly to one's body as is poison and this is basic for all maladies. [7] From these sources, it seems that living an Orthodox Jewish lifestyle can help lower the risk of obesity. It is important to recognize the ways that living an Orthodox Jewish lifestyle can help promote healthy eating and can help prevent eating disorders just by following *halakhah*.

Acknowledgements

I would like to express my gratitude to *Hashem* for granting me good health and all the good that comes along with it. I would like to thank Dr. Babich for providing me with resources and support for this manuscript and for infusing in me a passion for science and Torah. I would also like to thank my parents for supporting my education and for being there for me for every step of my life.

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The Halachic Considerations of Face Masks During the Covid-19 Pandemic

Leeba Sullivan

There are multiple considerations that need to be accounted for regarding one's *halachic* obligations to wear masks during the Covid-19 pandemic. *Halacha* places significant emphasis on the sanctity of human life, and with that comes the obligation of man to protect his life with the commandment of “*ushmartem et nafshotechem*” “carefully guard your life” (*Devarim* 4:15). Additionally, man does not only have the obligation to protect his own life but also those around him, based on “*v'lo tasim damim biyadecha*” “you shall not bring bloodguilt on your house” (*Devarim* 22:8). According to current scientific understanding, masks protect against virus contraction and transmission, and so it appears that it would fall under both the previously mentioned categories. One question that therefore must be examined is the extent one must go to in effort to protect himself from natural phenomena by putting in *hishtadlus*. Secondly, If one does not believe that wearing a mask is protective from transmitting and contracting the Sars-Cov2 virus, is there still any *halachic* obligation to wear a mask?

According to a review of 54 recent studies, across the board it was agreed that wearing a mask reduced the risk both of contracting and of transmitting the virus. These studies were conducted in various settings, such as within healthcare settings, schools and households [1]. Another meta-analysis studied the efficacy of face masks in preventing respiratory virus transmission and examined data from 21 different studies. It was concluded that for healthcare workers mask wearing reduced viral infection by 80% while for non-healthcare workers the reduction was 47% [2]. The Centers for Disease Control and Prevention (CDC) recommends that people wear masks in public settings and when around people who don't live in one's household, “especially when other social distancing measures are difficult to maintain” in order to help mitigate the spread of Covid-19. The CDC continues to explain that wearing face masks acts as a barrier to prevent the spread of respiratory droplets which is a significant route of transmission of the virus. Unsurprisingly, multiple studies have shown that there is potential for masks to also protect the person wearing

face masks acts as a barrier to prevent the spread of respiratory droplets which is a significant route of transmission of the virus. Unsurprisingly, multiple studies have shown that there is potential for masks to also protect the person wearing the mask from contracting Covid-19 by reducing the number of virus particles to which a person is exposed to [2-4]. By analyzing *halachic* texts about the value of protecting one's life as well as *halachic* responsa to previous plagues throughout history, one can begin to understand the Torah view and potential obligation to comply with the wearing of face masks during these difficult and trying times.

There are multiple instances within the Torah where the value of life and the sanctity of life are expressed. *Sefer Devarim* 4:15 states:

ונשמרתם מאד לנפשתיכם כי לא ראיתם כל תמונה ביום דבר יהוה אליכם בחרב מתוך האש

The Torah mandates that man must “significantly guard his soul,” meaning that one must be very careful to stay away from danger and protect his life. The *Kitzur Shulchan Aruch* explains based on this *pasuk* that if man does not have a healthy body, he will not be able to best serve *Hashem* which is why he has to, “להרחיק את עצמו מדברים, “המאבדין את הגוף ולהנהיג את עצמו, “בדברים המברין והמחלימים” to act in ways that that will help the body (*Kitzur Shulchan Aruch* 32:1). According to the *Kitzur Shulchan Aruch* one would not be allowed to do something that puts oneself in danger, and even has an obligation to protect himself from that danger. While the source for protecting oneself from danger is clear, it would only apply to wearing a face mask if wearing a face mask would protect himself from contracting the virus thereby protecting himself from danger. While research is still ongoing, several recent studies show that masks can protect the wearer as “wearing masks all the time during contact was independently associated with lower risk for SARS-CoV-2 infection” through the filtration of the mask [5, 6].

In addition to man's obligation to protect himself, it is necessary to examine man's obligation to protect others as well. It appears that even if one does not believe that wearing a face mask would be needed to protect oneself, say he is not fearful of contracting the virus, or if it was discovered that the face mask does not protect the wearer, he may still be obligated to ensure "*vlo tasim damim b'beytecha*" to not shed blood within one's house (*Devarim* 22:8).

כי תבנה בית חדש ועשית מעקה לגגך ולא תשים דמים בביתך כי יפל הנפל ממנו

This *pasuk* commands that when one builds a new house, he must ensure that there is a fence surrounding the roof, to ensure that blood will not be shed within his house on his account. Although one might think this commandment is only to the specific situation of a roof, it in fact applies to any dangerous situation (*Bava Kamma* 15b). Man has an obligation to ensure that there are no dangerous situations within his house, for example a dangerous dog or an unstable ladder. The *Rambam* explains that for any situation that can cause someone danger, a man has an obligation to ensure the safety of oneself and others (*Hilchos Rotzeach Vshmirut Nefesh* 11:4). The *Rambam* continues:

כל מכשל שיש בו סכנת נפשות מצות עשה להסירו ולהשמר ממנו ולהזהר בדבר יפה יפה

Not only is he violating the positive commandment of "השמר לך ושמר נפשך" if he has a dangerous situation within his house, but he is also violating the commandment of "לא תשים דמים," to not shed blood. If a person is obligated to ensure that one's physical house is safe from danger, it is reasonable to assume that one must act similarly with one's own body. Since one may not have an unsafe roof, well or ladder, how much more so one would be obligated to ensure that one's body does not endanger the health of someone else. Following the logic of the *Rambam* that one would be obligated to fix the situation to be rid of danger, with regards to Covid-19, one would be obligated to wear a face covering to protect those around him from a dangerous situation, specifically carrying and transmitting the virus.

Regarding the Covid-19 pandemic, one might argue that while there is some risk, the danger is very low and not significant enough to be *halachically* considered

placing someone in danger by not wearing a face covering. One might think that since the vast majority of people who contract Covid-19 survive the disease that perhaps mask wearing is unnecessary. This belief is mistaken. When dealing with a sickness that has a serious risk of death, even if the chance is small, we are required to treat that risk as significant and real. For example, Rav Asher Weiss explains that statistical calculations of the deadliness are not very significant within Halachic criteria.[7] He brings proof from the concept of a pregnant woman being considered a "*choleh sheyesh bo sakanah*." Even though not every woman who is pregnant is actually in danger, each pregnant woman is considered "in danger" because her risk is much greater than a non-pregnant woman.

Covid-19 also has many documented modes of interactions with people and may indirectly be lethal, which can be another substantial factor when accessing the danger of the virus. The *Igros Moshe* OC 4:91 has a very significant *chidush*. When discussing taking medicine on Yom Kippur, he explains that even if an illness itself is not a significant danger, if the illness could lead to other illnesses that would be a significant danger, both pathologies are viewed as one illness. (*Igros Moshe* OC 3:91). As proof, he cites one version of the well-known story of Rav Yisroel Salanter who *poskined* that the whole community should eat on Yom Kippur during a cholera epidemic in order to keep themselves from falling ill due to fasting. We can apply Rav Moshe and Rav Salanter's logic to Covid-19 to conclude that even if the coronavirus infection itself is not particularly dangerous, it is clearly linked to other deadly conditions, such as persistent symptoms of organ damage [8-9]. If Rav Salanter is *poskin*ing for healthy people to eat on Yom Kippur, which is an *issur deoryta*, and Rav Moshe uses this logic to *poskin* for people to violate an *issur derabanan* to prevent a lesser illness from potentially developing into something more dangerous, this logic can then be applied to one's obligation to wear a mask where there is no *issur* being violated at all. This would apply even if one were to feel that Covid-19 is not in itself dangerous enough to be considered "life threatening," as even if there is not a high risk of *sakanos nefashot*, as defined by the *Rambam*, Covid-19's link to other significant medical complications can be viewed as one overall illness.

Another aspect that to be addressed is whether man's obligation to protect the property of others, includes

monetary damages as well. While putting someone else at risk of the virus might not be a significant enough *sakana nefashot* that the *Rambam* is discussing, ראו שיכשל בה אדם וימות, there is still the issue of potential monetary loss. This could include various medical costs that a person might have, the closing of schools and businesses, or other similar damage. All these are foreseeable outcomes when one transmits the virus to others. The *Gemara* (*Bava Kama* 26b) explains that a person is liable for any damage that he causes, even if it is accidental. This is based on the concept of “*adam muad le’olam*,” that a man is always responsible for his actions.

מ”נא הגי מילי? אמר חזקיה, וכן תנא דבי חזקיה: אמר קרא, “פצע תחת פצע,” לחייבו על השוגג כמזיד ועל האנס כרצון

Based on the above *Gemara*, in the case of Covid-19 there may be reason to rely on one’s obligation to compensate for damages caused by transmitting the virus. However, Rav Asher Weiss explained that one would not be obligated to pay for compensations because you are never able to specifically connect one person or encounter to the viral infection and be certain that is the source of the illness, as Covid-19 is a highly contagious disease [10]. Even though “*adam muad le’olam*,” that does not apply when the harm is difficult to trace to one specific source. Nonetheless, this still shows the seriousness of causing damage to someone, even if it is accidental, as is the case where the transmitter is unaware of carrying the virus. Therefore, based on this, if there is a way to lessen the chance of causing someone damages, a *ba’al nefesh* would take necessary precautions.

One could dispute man’s obligation to wear a mask based on “נשמרתם מאד לנפשתיכם” and “ולא תשים דמים” בבייתך by stating that one can rely on *Hashem* to protect and, therefore, taking precautions would not be necessary. Firstly, *Beis Halevi* explains in his essay on *emunah*

and *bitachon* that no one in the current generations are on a high enough level to be able to rely fully on bitachon and *Hashem’s nisim* without putting in any *hishtadlus* or effort. (*Bais Halevi* on *Bitachon*). This opinion aligns with the *Rama* who states that man is obligated to flee at the beginning of a *magefah* (*Rama Yoreh Deah* 115:5). The *Rama*, based on the *Maharil*, explains that with regards to natural phenomena man cannot only rely on a miracle of *Hashem* but must be proactive, to help with his safety. Another interesting point the *Rama* raises is that one is obligated to flee from the plague at the beginning but not at the end. This may be due to a fear of already being contagious during the midst of the pandemic and further spreading the disease. Once again showing how serious a concern one must have about the safety of others.

While there is currently significant evidence that masks can mitigate the spread of the virus and even protect those wearing it, it is necessary to acknowledge that the scientific research and therefore protocols are constantly changing. The most obvious example is that the CDC recommended against wearing face masks for the general public when Covid-19 was first detected in the US in March 2020. That being said, the obligation to wear face coverings must be discussed within the terms of those who may currently still hold the belief that masks are not a necessary precaution with regard to one’s safety. Since currently many countries across the world faced with the pandemic are requiring face covering to be worn in various situations, another aspect of *halacha, dina d’malchuta dina*, needs to be addressed (*Nedarim* 28a). This *Gemara* explains that the laws of the king of the land would need to be followed are considered like Jewish laws. This would not apply with regards to *issurim* and *heterim*, meaning that if the kingdom prevented *mitzvot* from being observed then this principle would not apply. With regards to laws that do not affect other *halachot*, such as paying equitable taxes, it is nearly universally accepted that a Jew is required to follow the governmental law and it would be considered an *aveira* not to. Rabbi Aharon Rakefet Rockoff explains in his article that according to some *mefarshim, dina d’malchuta* would apply in any case where a specific governmental law is fairly applied and does not single out Jews specifically [11]. Rav Asher Weiss also is of the opinion that governmental laws that are for the benefit of society, such as sanitation or mandatory inoculation laws, would fall under this category (*Shut Minchas*

1. In one version of the story Rav Salanter made kiddush in front of everyone. In another version he shortened the davening in order for everyone to have time to rest and eat if needed. Regardless of the historical accuracies, Rav Moshe understood the story of Rav Salanter to have required everyone to eat, although each individual’s danger might not have been significant. See The Rabbi Who Ate on Yom Kippur by: Ira Taub <https://download.yutorah.org/2011/1053/756192.pdf> for a more in depth look at R’ Salanter’s actions during the cholera epidemic.

Asher 2:123). According to these opinions, a Jew would be required to wear a face covering because those rules do not single out Jews and they are for the benefit of society.

However, these opinions appear to be the minority view. Most other *poskim*, such as Rav Moshe Feinstein, hold that *dina d'malchuta* only applies to financial obligations (*Igros Moshe* CM 2:62). This would therefore imply that any fines or other punishments that the government chose to enforce for not wearing masks would be *halachically* binding. Rav Schachter explains that the “most significant area of application of *dina d'malchusa* is the right of any government, Jewish or non-Jewish, to punish criminals as they see fit, for the purpose of keeping law and order” [12]. According to this opinion, even if one is not mandated to wear a mask due to *dina d'malchuta dina*, it is problematic to protest fines and other government actions that are the result of failure to wear a mask.

One may argue that Jewish communities are specifically being singled out, such as the “hot spots” in New York [13]. Given what was discussed above with regards to *dina d'malchuta*, it is imperative that the laws be enforced fairly. Additionally, even if the laws target Jews perhaps, there is still a basis of an obligation for wearing a mask based on the concept of *chillul Hashem*. Although it is difficult to believe that Jews are specifically being targeted rather than deciding regulations based on the statistics, if this was true not wearing a mask may still be problematic. The *Rambam* and *Sefer Hachinuch* among others explain that there are three different aspects of *chillul Hashem* (*Sefer Hamitzvot Lo Taseh* 63 and *Sefer Hachinuch* 295). The third definition given is when an important person acts inappropriately in public, even if his actions are not in violation of *halacha*. The *Rambam* explains this third category based on examples brought in *Yoma* 86a. When discussing *chillul Hashem*, Rav Soloveitchik brings the example of not paying for his purchases right away, lest the butcher think that he is avoiding payment. While there would be nothing inherently *halachically* wrong with Rav's actions, to others it may appear that way and would therefore cause a *chillul Hashem*. When applying this to wearing masks, even under the unlikely assumption that not wearing a mask is not inherently problematic, there could still be the potential issue of it appearing badly in the eyes of others. It is important to discuss that this

mitzvah is defined in the context of an *adam “nechbad”* someone who is honored, or important. One could make the argument that if Jews are being singled out for not wearing a mask, especially if it is clear that they are Jews, this could now give them the status of an *adam “nechbad.”* The rationale is that these actions would be considered a *chillul Hashem* because others will see the prominent person doing this action that could be perceived incorrectly as something wrong. If the Jewish communities are currently being singled out and watched if they are complying with wearing masks, all the more so, at a time when we are in the spotlight the concept of *chillul Hashem*, desecrating *Hashem's* name, would be a significant factor.

Overall, there are many potential reasons to believe there is an obligation to wear a face mask during the pandemic. The first being the obligation to protect oneself. If one believes that a mask might not necessarily be a protectant, it appears that there would still be an obligation to wear one to protect others, based on the concept of “*vlo tasim damim b'betecha.*” Additionally, even if one personally believed that wearing a face covering would not protect anyone from the pandemic, while acknowledging that science is constantly changing, as well as are the recommendations and protocol, it appears that at this time potentially there may be an obligation based on *dina d'malchuta* and more universally understood based on the risk of creating a *chillul Hashem*.

Acknowledgements

I would like to thank my parents and grandparents for their constant support and instilling a love for Torah within me. I would also like to thank Dr. Babich for both his help with this manuscript as well as his constant support and dedication to his students, even during these difficult times. I would also like to thank Dr. Babich for giving me the opportunity to publish this manuscript. Additionally, I would like to thank Rabbi Laufer for his constant guidance and support while writing this manuscript.

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Halachic Perspective on Conjoined Twins

Rena Weinberger

Conjoined twins are twins that are born connected to one another, occurring when the embryo does not separate completely. Since identical twins are the result of one early embryo splitting at about eight to twelve days after fertilization, it is hypothesized that the formation of conjoined twins occurs because the early embryo might start splitting too late, causing an incomplete division. Another possibility is that the two embryos might somehow merge together [1]. Most conjoined twins do not survive pregnancy; only 18% of conjoined twins do not result in a miscarriage or stillbirth. About 75% births of conjoined twins die within 24 hours of birth [2]. Depending on where the babies are connected, surgery may be performed to disconnect the twins. The most common areas for conjoined twins to be connected are at the abdomen, base of the spine, length of spine, trunk, head, and chest [1].

One of the first mentions of conjoined humans is in an opinion in the *Gemara Eruvin* (18a) that *Adam* and *Chava* were created conjoined, and then they were separated. *Rabbi Yaakov Resher* in his *sefer* the *Shevut Yaakov* I no. 4, mentions this *Gemara* when discussing conjoined twins. Based on this *Gemara*, he says that we can deduce that conjoined twins are considered individual people according to *halacha*. *Rabbi Resher's* reasoning is because the *Torah* refers to conjoined *Adam* and *Chava* in the plural, as it says, "Male and female did He create them... and He called their name *Adam*" (*Bereishis* 5:2). *Rabbi Resher* notes that conjoined twins cannot get married according to *halacha*, because male conjoined twins would have to share a bed with each other's wife. With this reasoning alone, it seems permissible for female conjoined twins to get married if they live in countries excluded by *Rabbenu Gershom's* decree prohibiting polygamy. However, marital relations are prohibited when a third person is in the same room. Therefore, even those female conjoined twins would not be able to get married [3, 4].

R' Yaakov Hagiz in his *sefer Halachos Ketanos I* talks about his encounter with male conjoined twins. One of the twins was larger than the other and the smaller one

did not experience sensations, and was dependent on the larger twin. *R' Hagiz* said that they were considered two individuals according to *halacha*, but the smaller one was considered a *goses* (a person that is in the process of dying) [3, 4].

Noted in *Gemara Menachos* (37a), *R. Yehuda* was questioned if a person has two heads, on which head would he put his *tefillin*? *R. Yehuda* dismissed the question. Thereafter, another person asked *R. Yehuda* how much money should be given to the *cohen* to redeem the first-born son if the baby was born with two heads. The normal amount of money to give the *cohen* is five *sel'aim*. However, it was decided that in the case of conjoined twins, one should give ten *sel'aim* for each boy [3-5].

Tosfos on this *Gemara* brings down a *midrash* about *Shlomo Halmelach* watching *Ashmedai* "bringing forth from the ground" a two headed man. The man had both normal children as well as children with two heads. The father died and the children with two heads wanted a double inheritance from their father, and so they brought the case to *Shlomo Hamelech* [3] [5]. The *Shittah Mekubetzes* notes the solution developed by *Shlomo Hamelech*. He covered one of the twin's heads, and then poured hot water on the other twin's head. Both twins screamed when he poured the water, therefore he concluded that the twins were a single person [3, 5].

In modern times we have not encountered conjoined twins that share a nervous system as described in this *midrash*. The *Shittah Mekuzbetes*, therefore, concludes that conjoined twins that do not share a nervous system are considered separate people according to *halacha*. Additionally, according to the *Halachos Ketanos I* it seems that even if one of the twins is dependent on the other, they are each considered individual people. This is demonstrated even when the smaller twin is dependent on the larger twin, but the smaller one is a *goses* [3, 4].

Dicephalus twins share a heart and cannot survive because the heart cannot provide sufficient circulation for both bodies. The successful separation of diceph-

alus twins normally requires that one of the twins be killed. In 1977, there was a case of Orthodox Jewish dicephalus twins. The twins had a 6-chambered heart; on the side of one of the twins there was a normal four-chambered heart and on the side of the other twin there was a two-chambered heart. The two-chambered heart and four-chambered heart were fused together. The wall connecting the two hearts was very thin so the hearts could not be divided. Even if the hearts were successfully divided, the twin with the two-chambered heart would not survive. Additionally, the twin with the two-chambered heart would not survive if the hearts were divided [3-6]. Another concern was that splitting the hearts could cause their connection to the nervous system to be severed, and resulting in the fatal disruption of the heart's electrical conduction.

The case was brought to *R' Moshe Feinstein* ruled in favor of the surgery. Although he never formally published the answer, others recorded his analysis. One approach was based on a *breisa* in the *Terumot* (8:10). The *breisa* says that if a group of Jews travelling is stopped by bandits, and the bandits say that they must either sacrifice one of the Jews or all will be killed, then they should all be killed. However, if the bandits designate a specific person that they will kill, then the Jews can allow them to kill that person. In the case of the conjoined twins, one of the twins was already designated to die, so if it will save the life of the other then the surgery can be performed.

The *Amoraim* argue about the *breisa*. *R' Simeon ben Lakish* says that this case only applies if the designated person deserves the death penalty. However, *R' Yochanan* disagrees and says that the person does not need to deserve the death penalty [3]. The *Ran* and the *Gemara Yoma* (82b) seem to agree with *R' Yochanan*. However, the *Rambam* in *Hilchos Yesodei Hatorah* (5:5) rules according to *R' Simeon Ben Lakish*. The *Rema* in *Yoreh De'ah* (157:1) cites both opinions. This makes the analogy of this case to the conjoined twins difficult to understand because the twin designated for death is not deserving of the death penalty [3].

The other opinion as to why *R' Moshe Feinstein* paskined that the surgery was permissible is because the twin is acting like a pursuer [7, 8]. Based on *Kesubos* 33b, *R' Akiva Eger* argued that each twin is acting as a pursuer for the other, so that logic cannot stand. The only case

where this logic could be applied is if one could identify that the healthy heart belongs to one of the twins over the other. The doctor said that the four-chambered heart belonged to one of the twins, and the two-chambered heart belonged to the other. However, according to halacha, and modern science, the fact that one heart is in closer proximity to one twin does not mean it belongs to that twin. Blood passed from the four chambered heart to the two chambered heart, which seems to indicate that this was a six chamber heart. It was not one developed heart and one underdeveloped heart [3].

Rav Dovid Baruch Povarsky, one of the *Roshei Yeshiva* of *Ponivzeh*, wrote in *Bad Kodesh* IV no. 52 *Ve-Shamati* that he was informed that the reason *Rav Moshe* allowed surgery was due to the pursuer logic. However, *R' Povarsky* disagreed with this logic. The *Mishna* in *Ohalot* (7:6) says that a fetus can be killed in order to keep the pregnant mother alive. Nevertheless, once the head of the fetus is out of the mother one cannot kill it. The *Gemara* questions the *Mishnah's* conclusion as it seems like the fetus is acting like a pursuer. The *Gemara* says the *halacha* of pursuer doesn't apply in this case because the mother is being "pursued by heaven." The *Rambam* in *Hilchos Rozeach* says that the fetus is not considered a pursuer because the birth process is natural, and therefore, the risk to the mother is the result of a natural process. *R' Povarsky* applied the same logic to the twins. The twin considered a "pursuer" does not actually fall under the category of pursuer because becoming a conjoined twin is also a natural process.[4]. Additionally, since the heads of both twins are already out of the mother, they are considered a human according to *halacha*, so you cannot sacrifice one twin for the other twin [3].

R' Povarsky posits his own rationale as to why the second twin could be sacrificed. According to the *Gemara Shabbos* (135a) a *nefel*, which is a baby that will not survive for more than 30 days, is not considered a living person. In this case since the second twin is dependent on the first twin's circulatory system, this twin is considered a *nefel*. Even though the twin did survive for more than 30 days, he argues that if not for external medical equipment the twin would not have survived, so she is still considered a *nefel* [3].

R' Mordechai Winkler seems to agree with this logic as he writes in *Teshuvot Levushei Mordechai* that a premie that was in an incubator and survives for longer than

30 days is only not considered a *nefel* if he survives 20 years. In contrast, *Rav Shlomo Zalman Auerbach* says that a baby that needs an incubator should be redeemed (if it is a first born baby boy) in the usual way [3]. *R' Moshe Stern* in *Teshuvot Be'er Mosheh* I says that a premature baby may be redeemed after 30 days even if it is still dependent on an incubator as long as it has hair and fingernails. According to the *Rambam*, even if the hair and fingernails have not formed, the baby that survives for 30 days in the incubator can be redeemed. Therefore, everyone agrees that babies that are not premature, even if they are in the incubator for 30 days, are not a *nefel*. Thus, the twin that survived 30 days shouldn't be considered a *nefel* [3].

One could argue in favor of *Rav Povarsky's* opinion by saying that the twin with the underdeveloped heart is considered a premature baby and can be characterized as a *nefel* because there was not enough cell division to create two hearts. However, this would require saying that the four-chambered heart belongs to one twin and the two-chambered heart belongs to the other twin, and as mentioned earlier, we can not make that conclusion. Therefore, the twin cannot be considered a *nefel* [3].

As demonstrated, conjoined twins can raise a tremendous amount of *halachic* issues. Although this issue is rare and tragic, the *halachos* are fascinating, and the conclusions drawn highlight the value that the *chachamim* placed on every life.

Acknowledgments

I thank my parents for supporting my education at Stern College for Women. I would also like to thank Dr. Babich for helping me compile all the information for this paper.

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Is There a Place for Prehistoric Man Within the Torah? The View of One European Gadol, Rabbi Israel Lipschitz

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This article is a companion to the prior article, “Dinosaurs and Woolly Mammoths - is there a Torah Viewpoint?” [1] and the rationale for publication is the same -- numerous Jewish day schools and yeshivot visit The Museum of Natural History in Manhattan, NYC. The students are not prepared to view dinosaurs, mammoths, and prehistoric man, and are faced with a universe dated in the billions of years. As such, the Museum appears anti-Torah and leads to confusion in the minds of the students. In the mid-nineteenth century, Rabbi Israel ben Gedalyah Lipschitz (1782-1860), known as the *Tiferes Yisrael*, was faced with a similar problem. Instead of shying away from the scientific discoveries in his time, he welcomed these discoveries, and showed how the fossilized bones of dinosaurs, mammoths, and prehistoric man confirmed various *midrashim*, Talmudic passages, and *kabbalistic* thoughts. This article continues the ideas presented by Rav Lipschitz as applied to prehistoric man. Rav Lipschitz, a proponent of the *kabbalistic* idea of the existence of Sabbatical worlds prior to our current world, composed his thoughts in the *Derush Or' HaChayim* published at the end of the *Mishnayos, Seder Nezikin*, and which has been translated into English by Rav Aryeh Kaplan [2].

Rav Lipschitz, a proponent of the Devine Doctrine of Sabbatical Cycles, held there will be a total of seven distinct worlds, in tandem, with each world existing for 7,000 years, consisting of six millennia of productivity followed by a seventh millennium of destruction and desolation. This concept is noted in Sanhedrin (97a), “Rav Katina said, for 6,000 years will the world exist and for 1,000 years, *i.e.*, the seventh millennium, it will be destroyed. This will repeat seven times (49,000 years) culminating in a “grand” Jubilee millennium (*Yovel*) in which, according to some opinions (*e.g.*, Rav Menachem Recanati, an Italian kabbalist, 1223-1290), all creation returns to the primordial state of existence [see 3]. This Sabbatical cycling of seven worlds followed by a millennium of rest mimics the *Shmittah* cycle of work-

ing the land for 6 years and leaving it fallow for the 7th, or *Shmittah*, year, occurring seven consecutive times and culminating in *Yovel* in the 50th year.

A corollary of Sabbatical world cycling is that the destruction of one world leads to the creation of the following world. This idea is found in the Talmud (Chagigah 13a) and in several *midrashim* (Bereshis Rabbah, 3:7; 9:2; Koheles Rabbah 3:1.11; Yalkut Shimoni Koheles Rabbah 968:3): according to Rabbi Avahu, prior to this world, *HaShem* created many other worlds and destroyed them, saying, “This one pleases Me, those did not please Me.” The word “destroyed” probably is too harsh and needs to be understood as “recreate” [4] or as “remodel,” as planet Earth was not obliterated but rather was remodeled through the occurrence of natural disasters that destroyed most of human, animal and plant life (Rabbeinu Bachya, BaMidbar 10:36). On a lesser scale, for example, consider the *mabul* (*i.e.*, the flood) in Noach’s time, in which the world was remodeled through a natural (albeit, *HaShem* orchestrated) cataclysmic event. The progression from one Sabbatical world to the next Sabbatical world is a positive event. Rav Lipschitz noted that “each cycle is a preparation for the following cycle, and that each cycle is more highly perfected than the one before.”

Rav Lipschitz’s excitement with the discovery of fossilized human bones was that such findings supported the Torah’s concept of other worlds before our world, which commenced with *Adam HaRishon*. He noted, “Now, my dear friends see how firm is the basis upon which our holy Torah rests, for this secret (*i.e.*, of the existence of prior worlds) was revealed to our ancestors and teachers, and they revealed it hundreds of years ago, and now in our times we find this again most clearly visible to our eyes in nature.” Apparently worldly, he cited specific paleontological discoveries, such as the uncovering of remnants of various life forms at different strata and organized according to their complexity, frozen mam-

moths in ice in Siberia, aquatic creatures on mountain tops, and discovery of various varieties of dinosaurs (e.g., specifically, he noted a megalosaurus and the iguanodon). As these creatures do not exist in the current world, Rav Lipschitz concluded that cataclysmic events in prior Sabbatical worlds led to the destruction of these creatures.

Rav Lipschitz also tackled the discovery of fossilized bones of *pre-Adam HaRishon* hominoids. “Nevertheless, my dear brothers, observe the greatness and wondrous loftiness of the Torah, note the large letter *bet* with which the Torah opens and scrutinize the four “crowns” on this *bet*. The Kabbalists have a tradition that these four crowns hint that the creation of the world and all its hosts as described herein is the fourth in the order and that the letter *bet* which in *gematria* is equivalent to the number two informs us that the crowning glory of creation, the human intellect, is here for the second time.” Apparently, this current world is the fourth in the Sabbatical cycling and is the second time that humans were created. Thus, calculating backwards, the third of the Sabbatical worlds, as noted by Rav Lipschitz, had some form of human being (termed, “*pre-Adamites*” or pre-historic man), including mammoths. Possibly, in the second of the Sabbatical worlds the dominant life forms were reptiles, the age of the dinosaurs. Fossilized bones of dinosaurs and human beings are never found intermixed, as their coexistence was an impossibility, because human beings were no match for carnivorous dinosaurs [5]. Perhaps, the first of the Sabbatical worlds commenced with extremophilic bacteria and unicellular algae and culminated with simple plant and animal life.

Rav Lipschitz continued, “In my humble opinion, those humans who lived in the primordial world, known as “*pre-Adamites*” in the vernacular, are the humans who lived in the world before the creation of *Adam HaRishon* of the current cycle of creation, are identical to the 974 generations mentioned in Shabbas (88b) and Chagigah (14a) who were fashioned before the current cycle of creation. Continuing this thought, Rav Lipschitz noted, “Make the following calculation: According to the words of our sages, may their memory be blessed, this is derived from the verse, ‘He commanded a Word for 1,000 generations’ (Tehillim 105:8), that the Torah was fit to be given at the end of a thousand of these early generations, *viz.*, at the beginning of the current cycle of creation, which was created with greater perfection

in intellect and character traits than the previous one.” However, the *pre-Adamites* “behaved egregiously” and that prior world was terminated after 974 generations, or 26 generations short of 1,000. The destruction of that world occurred in the year 6818 from the beginning of that creation. The 26 generations which were lacking in the previous cycle were completed during the period between *Adam HaRishon* to Moishé, *viz.* the 10 generations from *Adam HaRishon* to Noach, the ten generations from Noach to Avraham, and the 6 generations from Avraham to Moishé, when the world matured and was purified to the point of being fit for the giving of the Torah.” Apparently, the fossilized human bones discovered in Rav Lipschitz’s era were the remnants of the *pre-Adamites*, i.e., prehistoric man.

Rav Lipschitz did not discuss what sins these *pre-Adamites* committed, but if they were punished, they must have been intelligent creatures with an understanding of right-from-wrong. According to paleontologists, the hominoids prior to modern man are Cro-magnon man, taking their name from a cave in France where they were discovered in 1868. Cro-magnon man and modern man both are scientifically classified as belonging to *Homo sapiens*. Anatomically, Cro-magnon man was like modern man, except that his face was slightly boarder, he was more muscular, and had a slightly larger brain. Cro-magnon buried their dead, used tools, made weapons, carved and sculptured small statues of humans and animals, practiced body painting, made beautiful cave paintings, lived in caves and huts, wove cloth, wore animal skins, and made jewelry. However, there is evidence that Cro-magnon man may have practiced cannibalism, shamanism, and was overly concerned with sex [6]. An early contemporary of Cro-magnon man were the Neanderthals, a distinct species of hominoid who, to some extent intermingled with Cro-magnon. The race for dominance between Neanderthals and Cro-magnon played out in in the Middle East; Cro-magnon won and the Neanderthals disappeared from the fossil record [7].

The man difference between Cro-magnon man and modern man was not anatomy, but rather it was spirituality - modern man has a *neshamah*. Rav Aryeh Kaplan [2] noted “that less than six thousand years ago, G-d created Adam as the first of a new type of human being. Although human beings may have existed before Adam, he was the first to acquire a special spiritual sensitivity

and to be able to communicate with G-d.” Beginning with *Adam HaRishon* all mankind had a *neshamah*. This concept was discussed seven hundred years ago by Ramban on the phrase “and G-d breathed into his nostrils the *neshama* of life and the Adam became to a living soul” (Bereshis 2:7). The preposition “to” bothered Ramban, who suggested that it may describe mankind progressing through stages of mineral, plant, fish, and animal. Finally, upon receiving the *neshama*, that creature which had already been formed (possibly, Cro-magnon man?) became a human, Ramban concluded with, “Or it may be that the verse is stating that prior to receiving the *neshama* it was a completely living being (possibly, Cro-magnon man?) and by the *neshama* it was transformed into another man, i.e., *Adam HaRishon*, and beginnings of the present mankind [see 7].

The concept of creatures with a human morphology but without a *neshama* is not foreign to Jewish thought. The Rambam in *The Guide of the Perplexed* noted the existence of human look-a-likes during the era of *Adam HaRishon*. These creatures were animals devoid of a *neshamah*, had the shape and configuration of man, exhibited a higher level of intelligence than other animals, but were “inclined to cause various kinds of harm and injury that are not possessed by the other animals” [8]. A Mishnah in Kilayim (8:5) discusses a creature called the *adnei ha’sadeh*, for which several definitions are presented, ranging from orangutan to feral human being. Rav Shimon Schwab [10, 11] suggested that the *adnei ha’sadeh*, as well as the phrase “*chayas ha’sa’dah*” (Bereishis 2:19), referred to isolated populations of pre-historic man. “They [*i.e.*, these prehistoric men] looked like men, walked upright like men, and perhaps even talked like men. Nevertheless, they were merely highly intelligent animals, because *Hakadosh Baruch Hu* had not endowed them with a *neshamah*.”

The beauty of Rav Lipchitz’s approach is the agreement between Torah and science, as noted in the following: (1) the occurrence of cataclysmic events that overturn an existing world, leading to the rebirth of a new world: Scientists suggest that planet Earth experienced five mass extinctions, in which 75-95% of the life species disappeared in any one cataclysmic event. The cataclysmic events causing these extinctions included: (a) an ice age; (b) rapid depletion of atmosphere oxygen; (c) erupting volcanoes; (d) a surge in global temperatures; and (e) asteroids impacting upon the planet [12].

(2) destruction of one world leads to the creation of a more perfect new world: The creation of *pre-Adamites* (e.g., Neanderthals, Cro-magnon men) necessitated the destruction of carnivorous dinosaurs, which would have viewed hominids as food. The age of the dinosaurs ended suddenly presumably because of the impact of the asteroid, the Chicxulub meteorite, onto the Yucatan Peninsula near the Gulf of Mexico, leaving a crater more than 110 miles wide. This impact projected more than 12,000 cubic miles of particulate material into the atmosphere, blocking sunlight from reaching the surface of the planet and causing a decades-long winter and an acidification of the oceans. When the dark covering lifted, 75% of all species on Earth had disappeared, including the dinosaurs, which was crucial for the emergence of mammals and eventually of mankind [13]. And, (3) in progressing from one Sabbatical world to the next, there is some carryover, in that the annihilation is not total, with the newly formed world having some benefit from the prior world: Rav Yisroel Belsky [14] provided two examples: (1) the world’s supply of fossil fuels, including oil, gasoline, natural gas, and coal, are derived from the remains of plants and animals that existed in prior Sabbatical worlds; and (2) the formation of soil occurred during the ice age in a prior Sabbatical world, when glaciers slowly advanced and then retreated, pulverizing the rocky surface into a fine powder, which formed the basis of soil.

Interesting the human genome shows some carryover of DNA from *pre-Adamites*. Apparently, in the prior Sabbatical world, ancient Cro-magnon *Homo sapiens* mated with members of *Homo neanderthalensis*, as current Europeans and Asians have approximately 2% Neanderthal DNA. A rather new hominoid species, *Homo denisovav*, anatomically like modern humans recently was discovered. Interesting, sequences of this ancient DNA are present in the DNA of living East Asian individuals, South Asians, and Aboriginal people in Australia [15]. She *et al.* (2004), focusing on the pericentromeric regions of human chromosomes, identified ancestral hominoid DNA in the DNA of modern man. Another example of carryover of DNA is the hemoglobin gene family in modern man, which is thought to have an ancestral (*pre-Adam HaRishon*) origin. The hemoglobin gene family is a set of several similar genes, formed by duplication of a single original ancestral gene, and now consisting of ten genes in two clusters on different chromosomes, called the α -globin and β -globin loci. These

two gene clusters are thought to have arisen as a result of duplications and mutations in an ancient precursor gene [17], originating in a prior Sabbatical world.

It is recognized that this article is not for everyone. People usually view religion and science as opposite ends of a spectrum. However, the explanation of ancient fossils as developed by Rav Lipschitz is an exception, as the Torah view and the scientific view are complimentary to the other. Rav H Billet [18] noted an embarrassing Internet video that was circulating about an unprofessional exchange between *frum* Jews concerning some aspect of evolution. In response, Rav Billet noted Rav Lipschitz's approach, as it harmonizes a Torah approach and a scientific approach, without either side bending their position. Praising Rav Lipschitz, Rav Billet wrote, "He performed a great service to Jewish scholarship that believes that Torah and reality are one and the same. A Jew must choose faith (*emunah*) above all else when there is no alternative. But where reason and faith can live together, that is ideal. Faith is greatly strengthened when scientific reality confirms the Torah reality that we all believe to be true."

Acknowledgments

Appreciation is expressed my colleagues in the Department of Biology at Stern College for Women. Your dedication to the students and to the college, especially in this era of COVID-19, is remarkable, exemplary, and much appreciated. Appreciation is expressed to Rabbi Yisrael Reisman, Rav, Agudath Yisrael of Madison, Brooklyn, NY, and Rosh HaYeshivah, Mesivta Torah Vodaath, Brooklyn, NY, for reviewing the Torah content of this article.

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