

Occupational Therapy Related Disorders  
in the Bible & Talmud:  
Ancient Remedies and Modern Treatments

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## **I. Abstract**

Both the Bible and the Talmud are replete with medical anecdotes, tradition, and law alluding to numerous physiological disorders. This paper delves into several of these disorders and discusses ancient remedies used to treat them. Today, many of these disorders can be successfully managed with occupational therapy, a relatively modern form of rehabilitation. Current practice methods encompass several of the discussed ancient remedies, demonstrating the timelessness of earlier practices in the setting of great advancements in medicine over time.

## **II. Introduction**

Occupational therapy is an allied health profession which aims to help individuals perform and succeed in their occupations despite physical and emotional limitations, with the ultimate goal of increasing their independence and enhancing their daily lives. This is achieved by means of evaluation and intervention, and encompasses both physical and emotional support and rehabilitation.

Populations who benefit from occupational therapy include, but are by no means limited to, children with developmental delays, the elderly, and people with biological disorders or injuries ranging from a broken digit to severe neurological damage. Upon assessment, individualized goals are proposed to the patient. A plan is mapped and various exercises, activities, and even discussion groups are used to help the individual achieve his/her goals.

A key component of occupational therapy, best utilized when implemented by both the therapist and the patient, is creativity. Assuming goals are realistic considering the patient's capabilities, such goals can be met by creatively modifying activities to allow the patient to complete the task in a functional, productive, and safe way.

This paper focuses on specific occupational therapy-related disorders that are alluded to in the Bible and/or the Talmud. The first section, *Disorders Alluded to in the Bible and Talmud* and the third section, *Modern Treatments: Occupational Therapy*, are categorized by disorder. The second section, *Ancient Remedies*, is categorized by remedy, as opposed to by

disorder in order to avoid repetition, as several of the remedies were deemed beneficial for multiple disorders.

The *Ancient Remedies* section, combines ancient remedies with current scientific knowledge, explaining the science behind the treatments. Although ancient societies lacked understanding regarding the mechanisms behind the effectiveness of certain remedies, they relied on therapeutic observation, prompting continued use.

The aim of this thesis is to demonstrate the fundamental basis for, and great advancements in treatments for these ageless occupational therapy-related disorders which, ultimately, provide individuals with a greater quality of life.

### **III. Disorders Alluded to in the Bible and Talmud**

#### *A. Ambidexterity*

Although not a recognized disorder itself, ambidexterity may cause or be indicative of a host of brain-related issues. An ambidextrous individual has equal use of his left and right hands, as neither hand is dominant.

There are few, if any, biological, psychological, or sociocultural implications of ambidexterity that can be derived from the Bible. It is stated in Jonah (4:11) that “the people of Nineveh did not know the difference between their left and right hands.” This may allude to ambidexterity, but there are no further mentions of how that may have affected these people. Similarly, in Chronicles I (12:2), it noted that the tribe of Benjamin “were armed with

the bow and could use both right hand and left hand to sling stones or shoot arrows with the bow...” The later Rabbis explain that most of the tribe of Benjamin were ambidextrous (Malbim on Chronicles I).

There are, however, very explicit sociocultural consequences stated in the Talmud. According to Rabbi Yehudah HaNasi, a 2nd century Rabbi, a *kohen* (priest) who is ambidextrous is disqualified from performing the Temple service (Mishnah Bechorot, 7:6). He assumed that such an individual must have learned to control his left hand as a result of a weakness in his right hand, which was considered a disqualifying defect. The Sages disagreed and held that rather than indicating a right arm deficiency, ambidexterity is the result of an unusual strength of the left arm, which allowed full control over both hands. His right hand remained strong and, therefore, he should remain qualified - perhaps even more qualified than a right-handed priest - to perform the Temple service (Mishnah Bechorot 45b:4).

Ambidextrous individuals make up approximately 1% of the population (Price, 2009). Current research has shown some of its biological and psychological implications. According to a study from the Imperial College of London, ambidextrous children are more likely than left- or right-handed children to develop mental health and scholastic problems, such as attention deficit hyperactivity disorder (ADHD), dyslexia, and language difficulties (Imperial College London, 2010). Perhaps this information provides a clue as to why an ambidextrous individual may have been treated as atypical in a sociocultural context.

### *B. Amputation*

There are numerous examples of amputation in the Bible and Talmud as a result of injury or punishment. Prior to the exodus from Egypt, the Israelites were subject to oppressive labor at the hands of the Egyptians. Due to the lack of technology and proper construction regulations, many of them were injured, having their limbs mutilated and severed, as a result of falling stones and other construction-related accidents (Midrash Tanchuma, Exodus 19:8).

In terms of punishment, there is a Biblical law stated in Deuteronomy (25:11-12) that if two men were in a brawl and the wife tried to save her husband by placing her hand on the genitals of the enemy, her hand should be severed. Rashi, the acronym of the Biblical commentator Rabbi Shlomo Yitzchaki of the 11th century, explained that, in actual practice, her punishment was monetary; she was required to pay the value of his embarrassment.

The Talmud describes a story in which Issachar, one of the High Priests, would wrap silk around his hands, as he was unwilling to dirty them while performing the Temple service. As Heavenly retribution, a series of events were set in motion whereby King Yannai severed Issachar's hands (Kereitot 28b).

There are many laws established in the Talmud regarding those who have had limbs amputated and even for those who encountered an amputee. The Talmud teaches that one who sees an amputee is required to make the blessing of “Baruch Dayan HaEmet”, “Blessed is the True Judge,” (Brachot 58b) a blessing more commonly recited upon learning about a

person's death. In the *Mishnah Berurah*, a work of Jewish law written by Rabbi Yisrael Meir Kagan of the 20th century, it states that amputations were a punishment from G-d, as the individual had been born complete and later had a limb removed (225:26). It is, therefore, deemed appropriate to recite this blessing, admitting that G-d is the “True Judge”.

Typically, a man dons *Tefillin*, phylacteries, on his left arm, the weaker arm. This includes one whose arm is amputated at the elbow. One who does not have a left arm at all should don *Tefillin* on his right arm, as does a left-handed person (Menachot 37a). Rabbi Moshe Isserles of the 16th century established that an amputee who does not have a hand, but only an arm, should don *Tefillin* without reciting the blessing (Arachin 19b, Orech Chayim 27).

### *C. Osteoporosis & Osteoarthritis*

There are several allusions in the Bible to osteoporosis, a disease in which the body's bones become weak and brittle, and to osteoarthritis, inflammation of the joints that occurs as a result of the natural erosion of cartilage. Such symptoms are noted by King David in two separate citations.

“For my (King David) life is spent in grief and my years in sighing; my strength has failed because of my iniquity, and my bones have decayed” (Psalms 31:11). His failed strength may be linked to iniquity, specifically his immoral behavior with Batsheva. The phrase “my bones have decayed” is separated by the conjunction “and”, implying that the decay of his bones had a separate cause, possibly due to a true physical ailment rather than a



spiritual one.

“And David desired, and he said: ‘Oh if one would only give me water to drink from the well of Bethlehem which is by the gate’” (Samuel II: 23:15). It has been suggested that King David had hyperparathyroidism, a recognized cause of osteoporosis, with symptoms of extreme thirst and fragile bones (Ben-Noun, 2007). This is purely conjecture, however, as extreme thirst may be attributed to other pathologies, such as diabetes mellitus.

Similarly, King Asa’s leg disease is mentioned in multiple locations: “Nevertheless, in the time of his old age he was diseased in his legs” (I Kings 15:23). It is important to note that “diseased in his legs” was written in the plural. It is unlikely that this was a result of a broken bone or other trauma. Furthermore, the pathology appears to be age-related, as it stated “in the time of his old age”.

Although not stated explicitly, King Asa’s disease may be arthritis, particularly osteoarthritis, resulting from the natural wear-and-tear of joints, often weight bearing joints, including the hips and knees. Osteoarthritis is common in the elderly, since their bodies have been used, and possibly abused, for many years. The human body is unable to repair or regrow worn-down cartilage, and, as a result, pain and inflammation will naturally develop over time (Arden *et al.*, 2008).

Later, it is noted: “And Asa suffered from a foot ailment in the thirty-ninth year of his reign until his ailment spread upward...” (Chronicles II, 16:12). A 2016 study showed that

foot and/or ankle symptoms in either or both feet significantly increased the odds of developing knee osteoarthritis (Paterson *et al.*, 2017). It appears likely that the disease actually began in Asa's feet and then migrated upwards through his legs, as noted in this study.

#### *D. Polydactyly*

Polydactyly, the appearance of one or more extra digits in the limbs of vertebrates, can appear in various forms. Preaxial polydactyly refers to additional digits that are situated anterior to the median axis of the limb, as in the pollux (thumb) side of the hands or hallux (big toe) side of the feet. Postaxial polydactyly are additions of digits posterior to the median axis, as in the fifth digit (pinky) side of the hands or feet (Bozick and Real, 2015).

Although not typically indicative of a broader pathological disorder, polydactyly may lead to social inhibition, as seen in the Bible and Talmud. Goliath of Gath is described as having polydactyly with a total of four extra digits, as noted in Samuel II (21:20): "Once again there was fighting, at Gath. There was a giant of a man, who had six fingers on each hand and six toes on each foot, twenty-four in all..."

Polydactyly and its sociocultural consequences are discussed extensively in the Talmud. Most of the earlier Talmudic authors agree that extra appendages were considered to be blemishes. For example, a *kohen* with an extra digit with a bone was disqualified from performing the Temple service, even after the appendage was removed (Mishnah Bechorot 7:6). When the Bible speaks of Goliath's extra fingers and toes, it is considered a negative

attribute (Bechorot 45b:1).

Interestingly, cases of polydactyly did not always have negative sociocultural consequences. For example, if a slave was polydactylic and his master excised the extra finger, then the slave would be freed (Kiddushin 25a). Additionally, there is a Talmudic case discussed of a woman with polydactyly. Her extra finger was not grounds for her husband to initiate a divorce since it was obviously present before their marriage (Ketubot 76a).

#### *E. Stroke, Spinal Cord Trauma, & Paralysis*

Another occupational therapy related disorder mentioned in the Bible and Talmud is paralysis, resulting either from stroke or from spinal cord trauma. King David wrote “If I forget you, O Jerusalem, may my right hand forget its skill, may my tongue cling to my palate...” (Psalms 137:5-6). Regarding this verse, neurologist Dr. Luiz A.L. Resende, in a paper published from the Botucatu School of Medicine in Brazil, stated: “As a neurologist, the symptoms of the right hand or forgotten or paralyzed side associated with tongue immobility describe the classic form of stroke with right hemiplegia and motor aphasia. Stroke is a prevalent clinical condition in modern times, and should also have been in antiquity” (Resende *et al.*, 2008).

In Samuel II (4:4) it is noted that “Jonathan son of Saul had a son whose feet were crippled. When five years old, upon hearing the news about Saul and Jonathan as related by Jezreel, his nurse picked him up and fled; but as she was fleeing in haste, the child fell and was lamed.” A likely explanation is that Jonathan’s paralysis was due to a spinal cord injury

as a result of his fall.

There is a story related in Samuel I (chapter 4) of Eli, the High Priest, who was 98 years old and blind. When he was told shocking news, he fell backwards off his chair, broke his neck, and died. It is not clearly stated whether he died on impact or if it was the result of a potentially treatable injury. Perhaps, due to insufficient medical knowledge, most individuals of the era would not survive a spinal cord trauma.

#### **IV. Ancient Remedies**

Many treatments of the aforementioned disorders and conditions, which today would be considered natural or home remedies, can be dated back to ancient times.

##### *A. Plants*

###### **1. Cinquefoil, *Potentilla*, and other Polyphenolic Plants:**

Cinquefoil, a five-leaf flower from the genus *Potentilla*, has been reported to have medicinal benefits. When made into a concoction and taken as a drink, it relieved pains, arthritis and sciatica. When applied directly to the body, it reduced swelling, healed wounds, and soothed the joints (Dioscorides, a 1st century Greek physician and author of *De Materia Medica*).

Plants of the *Potentilla* genus are rich in antioxidants, which have been shown to have many health benefits including the reduction of age-related cognitive decline and the risk of developing neurodegenerative disorders (Joseph *et al.*, 2009).

*Potentilla* plants are also rich in polyphenols, specifically phenolic acids. Phenolic compounds improve memory, age-related cognitive impairments, interneuronal signaling, and neurogenesis. They also reduce oxidative stress and inflammation in the brain. All these benefits can be advantageous to stroke patients or those with other various brain-related injuries. Other natural foods rich in phenolic acids include watermelon, quince, tomatoes, mulberries, and blueberries (Fleming 2017).

A study at the College of Korean Medicine concluded that polyphenols also reduce symptoms of rheumatoid arthritis by regulating many rheumatoid arthritis-related molecules, thus minimizing inflammation, (Sung *et al.*, 2019) as stated much earlier by Dioscorides.

## 2. Frankincense:

Frankincense is a resin from the *Boswellia serrata* tree and is native to the Middle East, home of many ancient societies including that of ancient Israel. King Saul, the first king of Israel, was “possessed by an evil spirit,” (Samuel I, 16:14) which, today, might be recognized as a depressive disorder. Although not explicitly stated in the Bible, some say King Saul used frankincense as a remedy for his "evil spirits", *i.e.*, depression (Williams, 2009).

A report in the journal, *Phytochemistry*, provided a deeper look into this ancient medication. Studies showed that frankincense is a major source of incensole acetate, an organic compound with promising anti-inflammatory effects, as supported by clinical trials for treatment of rheumatoid arthritis and multiple sclerosis. It has also been found to have

anti-depressive properties. Fortunately, studies show that incense acetate was of very low toxicity, even when administered in high and frequent doses (Al-Harrasi *et al.*, 2019).

A Turkish study of older men with moderate cognitive decline found that four weeks of frankincense consumption facilitated the improvement and retention of motor memory (Al-Harrasi *et al.*, 2019).

### 3. Greek Juniper:

The berries of Greek juniper, *Juniperus phoenica*, native to Europe and Britain, were used to ease the swelling and discomfort of gout and arthritis. A concoction of the berries would be taken orally or pulverized for external joint application (Williams, 2009). An excavated ancient well in Beer-Sheba, a Biblical city in Israel, contained remains of the Greek juniper plant (Lev-Yadun *et al.*, 1995). This discovery suggested that this plant was available and utilized in Biblical times..

### 4. Mandrake:

There is a famous tale in Genesis (30:14-18) in which Reuben gifts his mother Leah a bundle of mandrakes. Rachel begged her sister Leah for some of the mandrakes in the hopes that they would aid her in bearing a child. *Ramban*, Nachmanides of the 13th century, mentioned that, based on the given context, that mandrakes were believed to be a fertility agent. He, as a physician, doubted their efficacy.

According to Walter Jacob in *The Healing Past* (Jacob, 1993), the mandrake,

*Mandragora officinarum*, is a plant native to ancient and to present-day Israel. An extract from the root, stem, and leaves of the mandrake plant were made taken orally as a treatment for gout. According to Dioscorides, the mandrake plant was also used as an anesthetic for amputations or other surgeries; the patient would be overcome with sleep allowing the surgeon to perform a painless surgery.

5. Myrtle and Willow:

*Myrtus communis* and *Salix acmophylla*, more commonly known as myrtle (*hadas*) and willow (*arava*) respectively, are two of the "four species" relevant to the Jewish holiday of *Sukkot* (Leviticus 23:40). Both myrtle and willow plants contain salicylic acid which has properties similar to aspirin and act as a pain reliever (Duthie and Wood, 2011). The Ebers papyrus, an ancient Egyptian medical papyrus dating to 1500 BCE (Jack, 1997), included a precise description of the benefits of such plants: "When you examine a man with an irregular wound...and that wound is inflamed...[there is] a concentration of heat; the lips of that wound are reddened and that man is hot in consequence...then you must make cooling substances for him to draw the heat out...leaves of the willow" (Allen, n.d.).

Dioscorides believed that willow, due to its anti-inflammatory properties, was an excellent treatment for gout. In a Saudi Arabian study, similar benefits were observed from the myrtle plant. Oil from the myrtle plant was tested on swollen skin. Substantial reduction of the inflammation (42.1%) was greater than the control non-treatment group, but less than the ibuprofen-treatment group. Myrtle, apparently, was a reasonable anti-inflammatory option in ancient times when modern drugs were not available (Mohamed *et al.*, 2019).

## 6. Psyllium:

Dioscorides recommended the use of psyllium to relieve arthritic pains, dislocations, and aches. Today, psyllium is most commonly used as a source of fiber for dietary and digestive needs. A 2019 study researching “the role of dietary fiber in rheumatoid arthritis patients” concluded that after being put on a short-term high-fiber diet, “the physical functioning and quality of life in rheumatoid arthritis patients was significantly improved,” (Häger *et al.*, 2019) validating Dioscorides' approach.

Dietary fiber is key in the maintenance of cognitive functions and the prevention of neurodegenerative disorders (Bourre, 2006). According to a recent video clip produced by the New York Times, dietary fiber can also lower one’s risk of having an ischemic stroke, when an arterial blood clot prevents blood from reaching the brain ("These Foods May Significantly Lower Your Risk of Stroke.").

### *B. Wine and Vinegar*

Normally, observant Jews do not take medications on their Sabbath. Yet, in the Talmud (Shabbos 109a) Mar Ukva, one of the first generation *Amoraim* (Talmudic scholars between centuries 3-6 CE) of Babylonia, stated that one whose hand or foot was injured can soak in wine on the Sabbath to reduce swelling. Rav Hillel, another Talmudic sage, added that vinegar may not be used on the Sabbath to reduce swelling because it is more astringent than wine. Rav Ashi, a third Talmudic sage, said it may be used, but only on the top of the hand or foot, probably because those are covered with blood vessels and such wounds were



considered to be as serious as internal wounds. He included a personal incident in which a donkey stepped upon his foot on the Sabbath and he reduced its swelling with vinegar. Apparently, in Talmudic times, wine and vinegar were commonly used to decrease inflammation.

The Talmud (Gittin 69b) further suggested that a vessel of brine from small fish should be rolled sixty times on each thigh as a remedy for rheumatism.

Dioscorides discusses two types of vinegar at length: thyme (*thymoxalme*) vinegar and squill, or sea onion, (*scillinum*) vinegar. Thyme extract appears as a thick black fluid which was made into vinegar by the addition of warm water and salt. The ancients used thyme vinegar, which has anti-inflammatory properties, to soothe weak stomachs and to heal arthritic pain. Similarly, squill was made into a vinegar solution which was much stronger than that of the thyme. It was used both as an astringent and as a remedy to strengthen various conditions including weak bones, epilepsy, vertigo, sciatica, headaches, nerve disorders and even depression.

### *C. Equipment* (casts, prosthetics, wheelchairs, canes):

The Bible and Talmud both mention the use of various healing equipment which are still utilized in modern times. The Bible alluded to the concept of casts for broken bones: “O mortal, I have broken the arm of Pharaoh king of Egypt; it has not been bound up to be healed nor firmly bandaged to make it strong enough to grasp the sword” (Ezekiel 30:21). *Rashi* described casts, made of cloth and plaster, for a broken limb.

The Talmud (Shabbos 66a,b) discussed the permissibility of the usage of various equipment on the Sabbath. There is a debate between Rabbi Yose and Rabbi Meir regarding the permissibility of going into the public domain on the Sabbath with a wooden leg, perhaps one of the first documented prosthetics. Discussed also are the laws of wagons, used by children to learn to walk, and walking sticks, used by the elderly to align one's steps and straighten posture. Today, walkers and canes are widely used. The Talmud further described an individual crippled to the extent that he was unable to walk and used a chair to propel himself along with his hands, *i.e.* a wheelchair. Lastly, it stated that it was permissible on the Sabbath to tightly bandage the neck of one whose vertebra was dislocated in order to reset it, and the same was applied to tightly swaddling a baby to align any limbs which may have been dislocated during birth.

#### *D. Metals*

Regarding the marriage contract, the Talmud evaluated the phrase "...if they incurred a loss..." Rav Nahman, in the name of Rabba bar Avuh, explained that this loss referred to receiving defective coins, useful only for healing a wound (Ketubot 93b). The Talmud makes another mention of a coin, that a woman tied to a *tzinit* on her foot. The Talmud (Shabbos 65a) defined *tzinit* as a wound on the sole of her foot and explains that the hardness, rust, and engraved texture of the coin are all beneficial to the healing process.

There is a scientific basis for the use of metal coins for wound healing. As cited in a Romanian medical journal, "wound healing is an intricate three-staged process involving inflammation, proliferation and remodeling...Nanoparticles, due to their superior surface-to-

volume ratio, can be efficiently employed in countless medical applications, including wound therapy. Metal nanoparticles such as silver, gold and zinc possess outstanding properties such as low toxicity and antibacterial activity, making them perfect candidates for integration in wound dressings” (Mihai *et al.*, 2019). Perhaps the effectiveness of metal nanoparticles in wound healing explains the ancient use of coins as a remedy for wounds.

#### *E. Exercise*

Exercise, perhaps one of the most common remedies for body aches and pains, dates to the ancient world. Aulus Cornelius Celsus, a 1st century Roman medical writer, wrote in his textbook *De Medicina*, “When sinews tend to become painful, as is common in foot or hand ache, the affected part should be exercised as far as possible, even exposing it to work or to cold...”

Exercise as a therapeutic practice, especially for patients suffering from chronic diseases or musculoskeletal problems, originated in Greece and became common practice in many ancient societies. Ancient Greek doctors, including Herodicus of the 5th century, recommended kinesiotherapy as a means of repairing the body. Hippocrates, his student, also recognized the importance of therapeutic exercise and recommended hiking, running, dancing, and walking as means of healing and preventing diseases and disorders (Tipton, 2014).

The *Rambam*, commonly known as Maimonides, a great Jewish scholar and physician of the 12th century, wrote extensively on maintaining one’s physical health. He

stated that "maintaining a healthy body is among the ways of serving G-d, since it is impossible for one who is not healthy to understand or know anything of the Creator. Therefore one must distance oneself from things which harm the body, and accustom oneself to the things which strengthen and make one healthy" (Mishneh Torah, Deot, Chapter 4). He noted that as long as an individual exerts himself, his strength will increase and sickness will not befall him. On the contrary, one who is idle and does not exercise, will become weaker and develop various ailments. The *Rambam* defined exercise as "vigorous or gentle movement, or a combination of the two, which increases one's breathing rate," a practice which medical professionals would still recommend today.

## **V: Modern treatments: Occupational Therapy**

Many symptoms of the aforementioned disorders may be substantially mitigated by physical rehabilitation, specifically in the form of occupational therapy, which is a relatively modern discipline. "The primary goal of occupational therapy is to enable people to participate in the activities of everyday life. Occupational therapists achieve this outcome by working with people and communities to enhance their ability to engage in the occupations they want to, need to, or are expected to do, or by modifying the occupation or the environment to better support their occupational engagement." (WFOT, n.d.)

### *A. Ambidexterity*

As noted above, in the *Disorders Alluded to in the Bible and Talmud*, ambidextrous individuals are now known to be more prone to develop mental-health-related issues. Although psychotherapy and pharmacotherapy are crucial to the well-being of many who

suffer from mental disorders, occupational therapy could provide additional benefits that should be taken into consideration. According to the journal of Occupational Therapy in Mental Health, there is an ever-increasing need for occupational therapy in the context of mental health, (Kirsh *et al.*, 2019) perhaps a service from which the ambidextrous community may benefit.

Currently, occupational therapy for mental health can be divided into several categories with the common goal of integrating those with mental-health-related issues into typical society. Some of these categories include: supported employment (SE), individual placement and support (IPS), and supported education (SEd). SE and IPS refer to assisting such individuals to acquire and succeed in careers, with IPS being geared to those with more severe disabilities. SEd seeks to support individuals with varying disorders in obtaining postsecondary education where it otherwise may not be possible. More broad categories include group therapy, which facilitates common skills, productive habits, and motivation, and family-oriented interventions. Every one of these programs “can significantly impact the symptoms and outcomes experienced by [those] living with mental illness, including better health” (Kirsh *et al.*, 2019).

A South African study “compared two occupational therapy group programs, an existing discussion/activity program (SCN) and a new activity-based group program (SCO), on the social functioning of individuals with MDD (major depressive disorder)” (Ramano *et al.*, 2020). While the latter showed significantly higher improvement compared to the existing program, participants of both programs experienced positive results. The SCO

program included a powerful combination of discussion groups (offering moral support and life skills) and activity-based groups, many of which were excluded from the SCN program (Ramano *et al.*, 2020).

An important benefit of both programs was the bonding and trust that the groups developed. These relationships led to feelings of comfort, warmth, care, and a sense of belonging, all of which have therapeutic advantages. “Their learned interpersonal behavior in groups might be carried over to the outside world, which could have a positive effect on their future relationships, occupational performance and social functional well-being” (Ramano *et al.*, 2020).

### *B. Amputation*

The Talmud (Shabbos 66a,b), quoted above, mentioned various adaptive equipment including prosthetics (specifically a wooden leg), canes, and wheelchairs, all of which are utilized today by occupational therapists in helping amputees adapt to their new lifestyle.

A study found that 81% of its participants with limb loss who used their prosthetic equipment daily felt a greater level of physical independence. The study concluded that prosthetic use for amputees and physical independence were positively correlated (Atwal and Spilotopoulou, 2012).

Other studies researched newer types of equipment and strategies that were not available in historic times. One such study concluded that the use of a stump board, a

wheelchair extension which provides support for the stump of the amputated leg, in occupational therapy resulted in greater comfort and stump protection, and a reduction in edema (swelling) (Atwal and Spilotopoulou, 2012). Another study examined the effects of a self-management program that consisted of several sessions focusing on problem solving, skill acquisition, and pain management. Not only was the program beneficial in increasing functional abilities, but it also lowered the odds of post-amputation depression. The study concluded that this type of program would be particularly beneficial if led by occupational therapists (Wegener *et al.*, 2009), as it involves a combination of physical and mental rehabilitation and support.

### *C. Osteoporosis & Osteoarthritis*

There are many approaches which an occupational therapist may employ for their patients who suffer from osteoporosis and osteoarthritis, both of which can cause pain and limited mobility. An article from the Canadian Medical Association Journal discussed several of these strategies, including many different types of assistive devices, such as canes for support and weight bearing, splints and braces for rest and pain relief, and shoe wedges to help align the knees and mitigate symptoms that are worsened by non-supportive shoes. Another category of devices are those that provide assistance in the kitchen, including electric can and jar openers for greater ease in preparing even the most basic of foods. The article also discussed various exercises which could alleviate symptoms and increase strength, including range-of-motion exercises, isometric exercises, and aquatic exercises which are particularly safe and soothing (Clark, 2000).

#### *D. Polydactyly*

Many people born with polydactyly have their extra digits surgically removed at birth. Some, however, keep their extra digits and live typical lives, while others may need occupational therapy to assist in gaining the best possible use of their hands.

In searching the literature on this topic, I was unable to find articles or studies explaining which specific occupational therapy techniques might be beneficial for polydactylic patients. Based on my own observation of occupational therapists in various contexts, however, I would imagine that a certified hand specialist would best cater to the specific issues that may arise as a result of polydactyly. Hand specialists create splints for patients to help manage any discomfort and assist in proper hand use. Additionally, hand specialists work closely with patients to develop fine motor skills, such as writing and having control over small objects, which may otherwise be inhibited by extra digits.

#### *E. Stroke, Spinal Cord Trauma, & Paralysis*

After suffering from a stroke, spinal cord injury, and/or paralysis, a patient will need to adapt to their “new” body and relearn activities of daily living (ADLs), such as feeding, grooming, and dressing.

Occupational therapy is an integral part of rehabilitation for stroke and spinal cord injuries as it significantly improves ADL performance. This care is critical for plegic patients to be able to live independently and lead fulfilling lives. “To achieve this goal, Occupational Therapists apply a wide range of OT interventions including but not limited to therapeutic



exercises, splinting, adoptive/supportive equipments training (eating aids, writing aids, typing aids, cell phone holders), ADL training (dressing, combing, washing, bathing *etc.*) and fine motor activities of hands” (Arsh *et al.*, 2020).

Furthermore, a recent study suggests that stretching exercises have a positive impact on motor deficits following spinal cord injuries, “reflected by an improvement in walking, most probably by a reduction of spasticity.” The study group also showed a significant improvement in hip, knee, and ankle range-of-motion (Muresan *et al.*, 2019), which indicated an overall advance in mobility.

## **VI. Personal Interview**

A personal interview was conducted with Ms. Alyssa Gianotti, an occupational therapist specializing in hand therapy who practices at Professional Hand Therapy in Rockville Center, New York. The purpose of this interview was to learn about ambidexterity and polydactyly because of the difficulty I encountered finding therapy literature related to these conditions. Ms. Gianotti shared that she has not come across either of these disorders since she began her career in occupational therapy, nor does she think that they are indicative of larger physiological problems. She does not believe that an ambidextrous individual would have any difficulty performing typical tasks and would therefore not need occupational therapy. As I hypothesized, however, Ms. Gianotti said that a patient with polydactyly may have difficulty performing fine motor tasks. If she came across such a patient, she would perform a task analysis and communicate with the patient to determine which ADLs were difficult to perform. These steps help determine treatment goals and a plan for achieving

them. This patient would most likely benefit from adapting certain activities or modifying equipment in a way that makes tasks more feasible. Overall, Ms. Gianotti finds her career in hand therapy immensely rewarding because she helps her “patients get back to activities that are meaningful to them” (Gianotti, 2020).

## **VII. Conclusions**

Although we tend to view ancient societies as primitive, their knowledge of natural remedies, both botanical and others, and the use of rudimentary occupational therapy devices, led to significant health advantages. These societies laid the groundwork upon which subsequent generations, with advance in technology and the understanding of the human body, developed more efficient treatments. The greater efficiency in modern treatments allows people of varying capabilities to be more fully emerged in society and to have opportunities which they may have been stripped of had they lived in ancient times.

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