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TEAM “MENDME” REVOLUTIONIZES WRIST PHYSICAL THERAPY WITH NEW GLOVE AND APP

Team “MendMe” is a 5-month old group that seeks to develop innovative, accessible, and cost-effective technology to advance humanitarian aid. One of their current projects is designed to make wrist physical therapy more affordable, accessible, personalized, and accurate for patients. The group pitched their prototype in front of over 1,500 people and won “Best Overall Entry” at the AT&T 2017 National Developer Summit Hackathon Finals, allowing them to win a prize of \$20,000 to fund their physical therapy project.

This award-winning app is called “MendMe”. The group gained their inspiration when Biomedical Researcher Nora Galoustian was diagnosed with stage one osteosarcoma in 2011, and suffered from hand mobility impairments as a part of her symptoms. Once she recovered, she was determined to do more research. She found out that she was not alone, and that millions of people from across the globe are currently suffering from wrist mobility impairments. Extensively collaborating with other members Leo Boghozian, Mihir Desai, Andranik Sahakyan, and Brian Abramian, they created “MendMe”. The app is wirelessly connected to a physical therapy glove, assisting the patient in both active and passive wrist physical therapy. The app will record the range of motion of the wrist to track mobility improvement, record the number of exercise repetitions, provide simple instructions of the needed exercises for clarity, and have a healthcare provider messaging option. All of this will be done at the convenience of the patient's home, making treatment more accessible for patients and more efficient for health care providers.



“Understanding the world that a patient comes from as a whole, and whether or not the issue is the physical therapies themselves or lack of patient compliance can help direct healthcare providers toward a more accurate and custom exercise prescription. Currently, providers rely on the patient for this data, and patients are ultimately human beings that make mistakes, can forget, and can lie. Our app solves these issues with its original features. For the first time, solid data is given for healthcare providers to analyze and eradicate miscommunication errors, adjusting exercises for more efficient and personalized care. It also provides proof of patient compliance to insurance companies.” says Nora Galoustian, one of the founders and the head Biomedical Researcher for the group.



AMWA Executive Director Dr. Eliza Chin helped AMWA National Pre-Medical Chapter member Nora Galoustian with networking connections and educated her through inviting her to an iGIANT roundtable event. The young group of eighteen year-old college freshmen are extremely thankful for AMWA's full-fledged commitment to aiding them in such ways. Upon doing more research and speaking with specialist experts such as Dr. Douglas Chin, the group was able to better gauge what problems are most in demand and most needed for health care providers, insurance companies, and patients as a whole. Since wrist mobility impairments are extremely common and patient compliance is an international issue, the group fortified their focus on creating a project that addresses these problems.

Inspired by AMWA's and iGIANT's roundtable initiative to accelerate design elements conscientious of gender and sex differences, Nora Galoustian seeks to implement her newfound knowledge into her work. Through her research with "MendMe", she aims to solve the issue of treatments with gender and sex bias by doing research on the physiological differences of the wrist in all genders and sexes. Ms. Galoustian plans to incorporate this awareness into a design that will be effective for all patients. Taking into consideration the physiological differences of gender and sex, the group emphasizes the importance of individual-based treatment therapy. No two patients are exactly the same, and thus each glove will be created custom to each patient wrist size and strength ability. The glove design will be adjustable to perfectly fit the size of every patient's wrist. Additionally, the app will not record how fast a patient can complete their physical therapy exercises, because that would create data skewed against women*. Overall, the group hopes that "MendMe" will feed into the sprouting field of telemedicine to revolutionize healthcare treatment options and change lives.

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*In "Mean Sex Differences in Psychomotor Ability: A Meta-Analysis", data results have shown that the amount of wrist flexions completed in a given interval of time are faster in men than in women. This was tested by having subjects tap a sensor with their hand as quickly as possible, with only their wrists moving. Additionally, "Men performed faster on both hand and finger tapping measures with increasing age. There appears to be no publication bias in Wrist-Finger Speed distributions" (Thorley and McDaniel, 2013). Additionally, the average female wrist size is smaller than the average male wrist size (Vorvick).