Tarik Ksaibati, Featured Scholar Journal of Undergraduate Research

Currently a medical student at Lake Erie College of Osteopathic Medicine, Tarik Ksaibati describes himself as someone who is constantly searching for new experiences and challenges. Ksaibati believes that new challenges "shape [him] into a better person." Many of Ksaibati's experiences corroborate his sense of adventure: a 2011 graduate of the University of Florida, Ksaibati studied abroad in London after his sophomore year and took a backpacking tour of Europe. Locally, he is an avid camper, certified scuba diver, and a licensed skydiver (formerly of the Falling Gators at Skydive Palatka). In the year before medical school, Ksaibati worked as a transporter in the Emergency Department for North Florida Regional Medical Center. He also volunteered with outpatients through Shand's Streetlight program, a service program that provides palliative care for young adults. According to Ksaibati, the program matches volunteers with patients to provide companionship through "an arsenal of video games, movies, board games, music…to ease their stay." Ksaibati describes this experience as one of his most valuable: "Each day I enter a patient's room, strike up a conversation, and relate to them, when I have never been in their situation. I served as a captain, guiding meetings, organizing the team's time, and matching volunteers with patients…My experiences in Streetlight definitely improved my bedside manner with research participants."

Indeed, this experience has been fundamentally important to Ksaibati as he took the helm in a double-blind drug study on responses to various pain medications. Affiliated with UF's College of Dentistry at Shands, Ksaibati worked alongside Dr. Roger B. Fillingim to "gather pain responses and side effects that allowed an estimation of the effects of the medications" by measuring physiological and psychomotor responses to drug treatment. Focusing on pupillometry and reaction times as objective responses, Ksaibati sought to compare different gender and race demographics in relation to pain response. He became involved in this project after his freshman year when he took Science for Life Seminar IDH3931, a research course in which researchers present current projects to students. The research of Dr. Fillingim, the Principal Investigator (PI), most appealed to Ksaibati because it offered the opportunity to meet and interact with new people as well work one-on-one with "one of the world's leading pain researchers." For Ksaibati, this drug study was yet another remarkable adventure.

Ksaibati examined the drug effects of morphine and butorphanol for pupillometry and reaction time tasks. Ksaibati explains, "Opioids, such as morphine, are the most commonly prescribed class of drugs for treating moderate to severe pain and have been used for thousands of years for pain relief." Opioids stimulate the opioid receptors in the central nervous system in order to provide pain relief. Though opioids are prescribed according to patient weight, the effects of the drug can differ broadly between individuals. By identifying sources of variability, including factors of age, sex, and ethnicity, Ksaibati's study sought to provide data that can help physicians determine the most effective treatment regimen for pain.

The study involved each subject participating in four experimental sessions. After the first introductory session, participants were given either morphine, butorphanol, or a placebo. As a double-blind study, neither the researchers nor the participants knew what drug they were given.

Ksaibati examined reaction times with a pupillometer, a tool that induces a light reflex in the eye by shining a light for less than one second. Reaction times were recorded before drug administration, and twice subsequently and were tested by having participants press a space bar in response to an auditory tone. Later, participants were asked whether the tone was heard in the right or left ear. They were instructed to push an arrow key corresponding to their right or left hand, depending on the source of sound. The simple reaction time task illustrated the effects of the administered drug.

A fundamental aspect of the drug study was interacting with people—skills that Ksaibati undoubtedly developed in his travels abroad and in his work with the Streetlight program. Ksaibati's experiences with Shand's Streetlight program allowed him to develop the tools to interact with research participants and develop a bedside manner. Ksaibati explains that working with subjects "was one of the…most rewarding parts of the research. I got to meet new and interesting participants every day. I had to learn how to explain complex sets of instructions accurately and consistently to a diverse population. I had to provide a stress-free environment so as not to cause any extra participant anxiety, which would skew results (reaction times). It really allowed me to improve and practice my bedside manner."

This study has quite far-reaching implications: understanding how individuals respond to pain medication will influence how people experience pain and are subsequently treated. Physicians can use data on pain perception to determine the most effective pain relief. This can result in, as Ksaibati explains, decreased hospital stays and improved quality of care. Ultimately, the significance of this study suggests a better future for those seeking medical relief from pain. Additionally, his research revealed that African Americans "had a more significant change in maximum pupil diameter than other races…and reaction times for African Americans were more delayed than Non-Hispanic whites or Asians." As African Americans are generally under-treated with opioids, this study could change access to pain medication.

Though Ksaibati has since graduated from the University of Florida, he does intend to continue research. He is currently exploring options for summer medical research programs, particularly clinical pain research. His positive experiences working in such a supportive lab have been a source of encouragement as he plans his medical and academic career. Naturally, his rewarding research on pain will continue to pique his curiosity and excitement for adventure.

—Rachael Goldberg