

## Ellie Gore – Renal Association Medical Student Elective Bursary – End Report

The Renal Association Medical Student Elective Bursary facilitated my year of renal research. During this year I worked on the “DIMENSION-KD: Investigating lifestyle determinants of muscle and physical function, and the impact on patient experience and support needs in kidney disease” study, run by Leicester Kidney Lifestyle Team.

My main research focus was exploring the role of dietary protein intake on muscle mass and function in non-dialysis dependent CKD. Within the DIMENSION-KD team, my main role was leading “Part B” of the study – a muscle focussed visit to the unit following completion of the questionnaire based “Part A”. This visit involved objective measurement of participants' physical function (via a series of exercise tests), skeletal muscle quantity (measured by bioelectric impedance analysis (BIA) and ultrasound derived rectus femoris cross-sectional area), skeletal muscle quality (measured by myotonometry and echo intensity analysis of the ultrasound images), and biochemical markers (from blood samples). From this role, I gained invaluable research skills such as recruiting participants, consent taking, data collection, database design and management, phlebotomy and pipetting and storing blood samples. These skills will be transferrable to many aspects of my future career in medicine.

Recruitment of participants with varied age, diagnoses and experience has enlightened me to the breadth of CKD experience and how each person's disease journey is unique. I am grateful that I've been able to hear about these journeys, allowing development of my understanding of CKD and interpersonal skills in a less clinical setting.

I learnt how to competently and independently statistically analyse the data I collected. From this analysis I was able to draw patterns in my findings and produce abstracts which I submitted to national and international conferences.

In June 2019, I presented a poster entitled: "Exploring the relationship between habitual dietary zinc intake, appetite, and total energy consumed in CKD" at the annual Renal Association (RA)/British Renal Society (BRS) UK Kidney Week in Brighton. Presented in this poster was a sub-analysis of 64 DIMENSION-KD Part A participants, which found significant association between dietary zinc intake and total calorie intake which may be explained by the pro-appetite regulatory qualities of zinc previously described in literature. My presentation sparked interest and discussion during the designated poster session. To present my own research to an academic group and partake in discussion about the work was another key achievement. I feel this experience increased my confidence in presenting and exposure to academia which will help to shape my further career.

With regards to dietary protein, my key findings were: "Higher protein intake ( $\geq 0.8\text{g/kg/day}$ ) was associated with 15% greater muscle mass ( $P=.008$ ), 24% larger rectus femoris cross-sectional area ( $P=.050$ ), and 11-20% greater lower limb physical function with gait speed  $0.2\text{m/s}$  faster ( $P=.042$ ). Protein intake showed no significant association with renal function ( $r=-.215$ ,  $P=.263$ ) or symptom burden ( $r=-.040$ ,  $P=.837$ ). This work suggests higher dietary

protein intake protects against muscle wasting which preserves physical function. Our data suggests protein intake is not detrimental to renal health."

In September 2019, I presented these key findings of my research at Kidney Research UK's annual fellows day, as a rapid poster presentation. This experience posed new challenges, namely talking in front of a larger group of people and having to stick to a 3 minute time limit. Whilst initially nervous, I felt immensely proud, following my presentation, to have risen above these nerves and presented my research alongside experienced fellows.

In November 2019, I went on to present these findings at the American Society of Nephrology annual Kidney Week conference. I presented a poster entitled: "Exploration of dietary protein intake and skeletal muscle mass and function in non-dialysis CKD". Attendance at this event alone was an inspiring and career shaping experience and to have the opportunity to present my findings alongside experts in their fields was incredible.

In addition to presenting my findings at conference, I submitted a 12,000 word thesis detailing all of the work I had done in the past year and how this related to literature, for a Master's of Science in Medical research award. In September 2019, I received a distinction for this award.

My experience in renal research has provided me with many opportunities that I otherwise wouldn't have had. It has allowed me to develop many transferable skills namely interpersonal communication, time management, and public speaking. I have presented my research at national and international conferences and have achieved an MSc qualification.