**Self-funded PhD Project**

**Funding Source:** Self-funded or Applicant’s own sponsor

**Proposed start date:** To be agreed with successful applicant

**Closing date for applications:** open until filled

**Eligibility:** UK/International

**Department/School:** Health Sciences

Tuition Fees:

* UK nationals- £4,596 per year
* International from £21,000 per year

**Supervisors:** Prof Laura Gray ([lg48@le.a.uk](mailto:lg48@le.a.uk) ), Dr Lucy Teece ([lucy.teece@leicester.ac.uk](mailto:lucy.teece@leicester.ac.uk) ), Prof Kamlesh Khunti (kk22@le.ac.uk)

**Project Title:** Extending the use of the Leicester Diabetes Risk Scores with a focus on use in ethnic minority groups

**Project Description**

Background: Type 2 Diabetes (T2DM) is one of the most prevalent long-term conditions globally. However, options for identifying and preventing the condition have low uptake and underserve groups in greatest need. Population-based screening in Leicester/Leicestershire found that 20% of adults had either prediabetes (high risk for developing T2DM) or undiagnosed T2DM, which was significantly higher in ethnic minority groups. Prediabetes and early T2DM are asymptomatic and therefore difficult to detect, however by identifying prediabetes, T2DM may be delayed or prevented through lifestyle changes.

We have developed a non-invasive screening tool, the Leicester Diabetes Risk Scores (LDRS) for the early detection of prediabetes/undiagnosed T2DM. Completers are scored on seven risk factors (age, sex, ethnicity, BMI, waist circumference, family diabetes history and blood pressure). Total score provides an accurate indication of prediabetes/T2DM risk with high scorers advised to visit their GP for confirmatory tests. The score is available on the Diabetes UK website where it has been completed over 2.3 million times (https://riskscore.diabetes.org.uk/start). We have also developed a similar score for use in primary care.

Aims (all focusing on ethnic minority groups):

* WP1: Syntheses data from validation studies for the Leicester scores;
* WP2: Identify barriers and facilitators of risk score use in community settings;
* WP3: Validate score using prospective existing primary care data;
* WP4: Assess risk by ethnicity.

Research Plan:

WP1: The risk scores were developed and validated using data from Leicester. A number of externally conducted validation studies have now been published. A systematic review will be conducted to identify studies validating the LDRS. Where possible validation data by ethnic group will be extracted. Data will be pooled using meta-analysis methods.

WP2: There is growing interest in screening for diabetes in community care settings, such as pharmacies, opticians and dentists. This systematic review will synthesise qualitative evaluations of such services to identify barriers and facilitators to successful delivery, again focussing on the use of such services for minority ethnic populations.

WP3: The LDRS developed for use in primary care has not yet been validated prospectively, i.e. do those identified at high risk of prediabetes go on to develop T2DM. Clinical Practice Research Datalink (CPRD) will be used to validate the score.

WP4: Both scores currently have a very board way of assigning risk based on ethnicity (white versus other). We will use CPRD to assess whether a more granular scoring system can be developed using the ONS 5 categories of ethnicity as a minimum (White, Mixed/Multiple, Asian, Black/African/Caribbean, Other) as we know that diabetes risk varies by ethnic group (an analysis requested by Diabetes UK). We will also assess whether the validated age range for the scores (currently 40-75) can be broadened as we know that T2DM is now developing at earlier ages.

**References:**

Yonel Z, Cerullo E, Kröger AT, Gray L.J (2020) Use of dental practices for the identification of adults with undiagnosed type 2 diabetes mellitus or non-diabetic hyperglycaemia: a systematic review. Diabet Med. 2020 May 19. doi: 10.1111/dme.14324. Online ahead of print.

Barber SR, Dhalwani NN, Davies MJ, Khunti K, Gray L.J (2017) External national validation of the Leicester Self-Assessment score for Type 2 diabetes using data from the English Longitudinal Study of Ageing. Diabet Med. 2017 Nov;34(11):1575-1583. doi: 10.1111/dme.13433. Epub 2017 Aug 20.

Gray L.J, Davies MJ, Hiles S, Taub N, Webb DR, Srinivasan BT, Khunti K (2012) Detection of Impaired Glucose Regulation and/or Type 2 Diabetes Mellitus, using primary care electronic data, in a multiethnic UK community setting. Diabetologia. 55(4):959-66.

Gray L.J, Taub NA, Khunti K, Gardiner E, Hiles S, Webb DR, Srinivasan BT, Davies MJ (2010) The Leicester Risk Assessment score for detecting undiagnosed Type 2 diabetes and impaired glucose regulation for use in a multiethnic UK setting. Diabetic Medicine. 27(8) 887-895.

**Entry requirements:**

Applicants are required to hold/or expect to obtain a UK Bachelor Degree 2:1 or better in a

relevant subject. A Master degree in a relevant subject will be preferred. Applicants should have

undertaken training in Statistics.

The University of Leicester [**English language**](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.findaphd.com%2Fcommon%2FclickCount.aspx%3Ftheid%3D145242%26type%3D184%26DID%3D778%26url%3Dhttps%253a%252f%252fle.ac.uk%252fstudy%252fresearch-degrees%252fentry-reqs%252feng-lang-reqs&data=05%7C01%7Cpgradmissions%40leicester.ac.uk%7C4adc7a54f836406f343508da7c3ae3e6%7Caebecd6a31d44b0195ce8274afe853d9%7C0%7C0%7C637958889610911449%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=nqjcz63n2lT2QuhXDXH44gqfvL6EJdwqFk7zmTqoIlU%3D&reserved=0) requirements apply

**Application advice:**

**Apply using the application link at the bottom of this web page**

With your application, please include:

* CV
* Personal statement explaining your interest in the project, your experience, why we should consider you in addition to confirmation of how you will pay your fees.
* Degree Certificates and Transcripts of study already completed and if possible transcript to date of study currently being undertaken
* Evidence of English language proficiency if applicable
* In the reference section please enter the contact details of your two academic referees in the boxes provided or upload letters of reference if already available.

In the funding section please specify that you wish to be considered for **Ref HS-SF-GRAY**

In the proposal section please provide the name of the supervisors and project title (a proposal is not required)

**Project Enquiries: Prof Laura Gray** [**lg48@le.ac.uk**](mailto:lg48@le.ac.uk)

**Application enquiries to** [**pgradmissions@le.ac.uk**](mailto:pgradmissions@le.ac.uk)

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