**University of Leicester**

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| **Project Reference** | BRC Studentships |

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| **Additional Supervisor** | None |

**Section 2 – *Project Information***

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| **Project Title** | Comparing Causal Inference and Survival analysis Approaches to Estimate the Effect of Type 2 Diabetes on incidence of hip fracture and its association with multi-morbidity and mortality | |
| **Project Highlights:** | 1. | Exciting news! Our PHD studentship aims to shed light on the relationship between type 2 diabetes and hip fractures/mortality. By using innovative methodologies, we hope to provide valuable insights for healthcare professionals and policymakers to improve outcomes for those with diabetes. Stay tuned for updates! #diabetes #hipfractures #mortality #healthcare #research |
| 2. | Did you know that people with type 2 diabetes are at an increased risk of hip fractures and mortality? Our study seeks to understand this relationship better and identify the impact of ethnicity and deprivation. We hope to use our findings to design targeted interventions that can make a difference in the lives of those with diabetes. #type2diabetes #hipfractures #mortality #interventions #healthresearch |
| 3. | We're excited to announce our study on the effects of type 2 diabetes on hip fractures and mortality! Using innovative methodologies, we aim to provide a better understanding of this relationship and explore the impact of other factors such as ethnicity and deprivation. Join us in our mission to improve outcomes for those with diabetes. #healthresearch #type2diabetes #hipfractures #mortality #innovation |
| **Project Summary** | | |
| Hip fracture is a major public health problem that causes high morbidity and mortality rates worldwide. While ethnicity and deprivation are known to be influential factors in hip fracture risk, the relationship between type 2 diabetes (T2D) and hip fractures/mortality is not fully understood. This study aims to fill this gap by using innovative methodologies to better understand the relationship between T2D, hip fractures, and mortality, and the potential impact of ethnicity and deprivation.  The study will use retrospective cohort data from the CPRD, HES, and ONS data to evaluate the marginal causal effect of diabetes on the incidence rate of hip fracture and morbidity/mortality in individuals over 50 years of age. The parametric g-formula will be used to estimate the effect of diabetes on hip fractures and mortality, and unlike standard regression approaches, this method can adjust for time-varying confounders that are affected by prior exposures. The interaction between ethnicity and deprivation quintiles with diabetes status will also be evaluated.  The study aims to gain a better understanding of the effect of diabetes on hip fractures and mortality, and the potential impact of other factors such as ethnicity and deprivation. The results of the study could have important implications for healthcare professionals and policymakers in terms of designing and implementing targeted interventions to reduce the incidence of hip fracture and improve mortality outcomes in populations with diabetes.  The expected outcomes of the study include valuable insights into the relationship between type 2 diabetes, hip fractures, and mortality, and the potential impact of ethnicity and deprivation. By using innovative methodologies, the study aims to provide a better understanding of this relationship and explore the most appropriate methodologies to use when exploring complex relationships in epidemiological studies.  In summary, this study aims to provide valuable insights into the relationship between T2D, hip fractures, and mortality. By using innovative methodologies and exploring the impact of other factors such as ethnicity and deprivation, the study hopes to provide information that can lead to the design and implementation of targeted interventions to reduce the incidence of hip fracture and improve mortality outcomes in populations with diabetes. | | |
| **References**  1.Clynes, M.A., et al., *The epidemiology of osteoporosis.* British medical bulletin, 2020.  *2. Kanis, J.A., et al., A systematic review of hip fracture incidence and probability of fracture worldwide. Osteoporosis international, 2012. 23: p. 2239-2256.*  *3. Kanis, J.A., et al., FRAX and ethnicity. 2020, Springer. p. 2063-2067.*  4*. Hernán, M.A. and J.M. Robins, Estimating causal effects from epidemiological data. Journal of Epidemiology & Community Health, 2006. 60(7): p. 578-586.* | | |