

<b>Institution:</b> King's College London
<b>Unit of Assessment:</b> 3B - Pharmacy and Nutritional Sciences
<b>Title of case study:</b> Psychological approaches to improving glycaemic control and reduce costs
<p><b>1. Summary of the impact</b></p> <p>Researchers at King's College London have developed the largest UK programme of research in diabetes and mental health. Their main findings are that depression is associated with worse outcomes, in particular increased mortality in diabetes, and that training diabetes nurses in psychological skills can help patients improve adherence. This research has been translated into award winning service innovations that integrate the treatment of psychiatric comorbidities with diabetes care. It has also been developed into a nurse-led clinic to optimize glycaemic control in those struggling the most with adherence and been used to deliver a series of local and national educational programmes to increase access to psychological skills training for diabetes professionals.</p>
<p><b>2. Underpinning research</b></p> <p>In the UK, &gt;3 million people have diabetes. Between 10-20% of these people suffer from clinical depression, a condition associated with worse biomedical outcomes and premature mortality. Researchers at King's College London (KCL), led by Khalida Ismail (1998-present, Professor of Psychiatry and Medicine), have concentrated on understanding the underlying biological, psychological and social mechanisms for this association and developing innovative, complex interventions as adjuncts to diabetes care for improving diabetes control.</p> <p><b>Risk factors for worse diabetes outcomes</b></p> <p>KCL research initially concentrated on finding the prevalence and consequences of mental health problems in people with diabetes. One such study, nested in the National Psychiatric Morbidity survey, found that people with diabetes were significantly more likely to suffer from common mental disorders, in particular mixed anxiety and depression (odds ratio 1.7), and that this co-morbidity was significantly associated with impaired health-related quality of life, more days off work, non-adherence and difficulties with diabetes self-care (1). In a prospective cohort study of 253 patients with their first diabetic foot ulcer, KCL researchers found that at recruitment the prevalence of minor and major depressive disorder was 8.1% and 24.1%, respectively. Over 18 months there were 40 deaths and regression analysis showed that depressive disorders were associated with an approximately threefold risk for mortality compared with no depression (Hazard ratio [HR] 3.23 and 2.73 respectively) (2). At 5-year follow-up there were 92 deaths, with regression analysis showing a significant twofold increased risk of mortality for a depressive episode (HR 2.09) (3). KCL researchers also found that the rates of detection and treatment of depression was suboptimal. In a systematic review and meta-analysis of 18 studies (n = 25,847), they found that depression was significantly associated with insulin resistance, suggesting that depression was not simply a psychological sequelae of living with a chronic disease (4).</p> <p><b>Treatments to aid glycaemic control and psychological distress</b></p> <p>A meta-analysis and systematic review by KCL researchers showed that psychological therapies led to improvements in long-term glycaemic control and psychological distress (5). Subsequently they developed the UK's first nurse-led, manualised psychological intervention to improve glycaemic control in people with type 1 diabetes in 'A Diabetes and Psychological Therapy Study' (ADaPT). Here, research nurses delivered 12 sessions of motivational interviewing and diabetes-focused cognitive behaviour therapy to help patients improve their confidence and skills in self management. The study was carried out at diabetes clinics in seven acute trusts in South-East London and Greater Manchester (n = 344). ADaPT was associated with clinically significant improvement in blood glucose control with similar cost effectiveness (6-8).</p>
<p><b>3. References to the research</b></p> <ol style="list-style-type: none"> <li>1. Das-Munshi J, Stewart R, Ismail K, et al. Diabetes, common mental disorders, and disability: findings from the UK National Psychiatric Morbidity Survey. <i>Psychosom Med</i> 2007;69(6):543-50. Doi: 10.1097/PSY.0b013e3180cc3062 (42 Scopus citations)</li> <li>2. Ismail K, Winkley K, Stahl D, et al. A cohort study of people with diabetes and their first foot ulcer: the role of depression on mortality. <i>Diabetes Care</i> 2007;30:1473-479. Doi: 10.2337/dc06-2313 (76 Scopus citations)</li> <li>3. Winkley K, Sallis H, Kariyawasam D, et al. Five year follow-up of a cohort of people with their</li> </ol>

**Impact case study (REF3b)**

first diabetic foot ulcer: the persistent role of depression on mortality. *Diabetologia* 2012;55;303-10. Doi: 10.1007/s00125-011-2359-2 (7 Scopus citations)

4. Kan C, Silva N, Golden SH, et al. A systematic review and meta-analysis of the association between depression and insulin resistance. *Diabetes Care* 2013;36:480-89. Doi: 10.2337/dc12-1442 (5 Scopus citations)
5. Ismail K, Winkley K, Rabe-Hesketh S. Systematic review and meta-analysis of randomised controlled trials of psychological interventions to improve glycaemic control in patients with type 2 diabetes. *Lancet* 2004;363(9421):1589-97. Doi: 10.1016/S0140-6736(04)16202-8 (174 Scopus citations)
6. Ismail K, Thomas SM, Maissi E, et al. Motivational enhancement therapy with and without cognitive behavior therapy to treat type 1 diabetes: a randomized trial. *Ann Intern Med* 2008;149(10):708-19. Doi: 10.7326/0003-4819-149-10-200811180-00005 (33 Scopus citations)
7. Ismail K, Maissi E, Thomas S, et al. A randomised controlled trial of cognitive behaviour therapy and motivational interviewing for people with Type 1 diabetes mellitus with persistent sub-optimal glycaemic control: A Diabetes and Psychological Therapies study (ADaPT). *Health Technology Assessment Report* 2010;14:1-101. Doi: 10.3310/hta14220 (8 Scopus citations)
8. Patel A, Maissi E, Chang HC, et al. Motivational enhancement therapy with and without cognitive behavioral therapy for type 1 diabetes: economic evaluation from a randomized controlled trial. *Diabet Med* 2011;28:470-79. Doi: 10.1111/j.1464-5491.2010.03198.x (3 Scopus citations)

**Grants (PI: K Ismail)**

- 2001-2004. Is depression associated with an increased risk of recurrence of diabetic foot ulcers for 36 months? Wellcome Trust, £122,333
- 2003-2007. A randomised controlled trial of cognitive behaviour therapy and motivational interviewing for people with Type 1 diabetes mellitus. NHS Health Technology Assessment Programme, £836,107
- 2007-13. Non-pharmacological approaches to improving diabetes outcomes. NIHR, £1,970k

**4. Details of the impact**

King's College London (KCL) research has revealed the extent of depression in people with diabetes as well as its association with worse outcomes, including mortality. KCL researchers have used this knowledge to develop psychological training programmes and service innovations for non mental health professionals.

**Clinical Practice:** KCL researcher's observations of the depression-diabetes link led to the development of the Diabetes and Psychiatry service at King's College Hospital (KCH) in 2003, an integrated service for people with diabetes that accepts both local and national referrals. This service includes a Consultant Psychiatrist (Dr Khalida Ismail) and Clinical Psychologist, delivering both assessment and brief psychological treatments including Cognitive Behavioural Therapy (CBT) for patients with psychological difficulties impacting on their diabetes self management. The service also includes the Optimise Clinic, which offers Motivational Interviewing to those who want to optimise their diabetes control by addressing motivation and lifestyle factors (1).

This service is highly recognised in the UK. For instance, it is highlighted as a gold standard model in a 2010 report from NHS Diabetes and Diabetes UK on 'Emotional and Psychological Support and Care in Diabetes.' This report also cites Das-Munshi 2007 when discussing the prevalence of depression in people with diabetes and uses Ismail 2004, 2007, 2008 and Winkley 2006 when discussing how "the provision of emotional and psychological treatment and support reduces psychological distress" (2). Similarly, a 2012 NHS Confederation report on psychological and psychiatric treatments for long-term physical illness lauds the KCH clinic as "an award-winning liaison mental health service." This report uses Das-Munshi 2007 when discussing how diabetes and depression co-morbidity can increase difficulties in self-managing health and increase the likelihood of needing time off of work and Ismail 2004 when showing that addressing psychological needs can improve diabetes control (3). The service is also discussed in a 2012 report by the Centre of Mental Health on Liaison Psychiatry in the NHS, which also cites Das-Munshi 2007 when discussing time off work in those with diabetes and depression (4).

**Impact case study (REF3b)**

After establishing this service, KCL researchers found that many people with depression and diabetes also had social problems. In 2010, they were awarded a NHS Regional Innovation Fund to develop the service further to integrate social care for people with poorly controlled diabetes and psychiatric comorbidities. The resulting 3 Dimensions for Diabetes (3DFD) integrates psychological and psychiatric care, medical care and social welfare delivered by integrated care health experts. It currently treats around 300 people a year and now extends into the local community via primary care facilities in Lambeth and Southwark (5). 3DFD has been successful in improving glycaemic control by a reduction in HbA1c of 1.5%, which is three times higher than would be expected from a new drug, and reducing bed days at KCH. It has been very well met by patients (6) and in 2011 3DFD won three Quality in Care Awards (7). The reach of the 3DFD model has been extended by it being replicated and commissioned by Hillingdon Clinical Commissioning Group (8).

**Policy:** KCL research has also helped in the development of policy regarding psychological support services for people with diabetes. For instance, a 2008 report from Diabetes UK was based around a survey of the availability of psychological care for diabetics carried out in part by KCL researchers. This report included Das-Munshi 2007 when discussing the prevalence depression in diabetes and Ismail 2004 and Winkley 2006 when discussing how the success of treatment for psychological conditions in people with diabetes. It concluded that “specialist psychological services need to be able to provide direct clinical care with appropriate psychological therapies and biological treatments (medication) where necessary” (9).

The manuals for the ADaPT psychological intervention are free to download via the National Institute for Health Research website (10). Research from the ADaPT study and other KCL work has been used in both UK and International guidelines to help form recommendations. For instance, in 2010, the Royal College of Physicians put out a consensus guideline on diabetes management using Winkley 2006, Ismail 2004 and Ismail 2008 to back the statement that “psychological interventions are effective in improving glycaemic control in the short term” (11). Further afield, in 2013 the Canadian Diabetes Association put out extensive Clinical Practice Guidelines. In their chapter on ‘Diabetes and Mental Health,’ they cite Winkley 2006 and use Ismail 2004 to back up the recommendation that “psychosocial interventions should be integrated into diabetes care plans” (12). In their chapter on ‘Self-Management Education’ they cite Ismail 2010 when they discuss cognitive behaviour therapy and Ismail 2004 when they detail how “knowledge [of how to manage diabetes] should be augmented with behavioural interventions to achieve longer-term change in self-care behaviours” (13). Ismail 2004 is also used by the International Diabetes Federation in their 2012 Clinical Guidelines which recommends that diabetes teams “Refer to a mental health-care professional with a knowledge of diabetes when indicated” (14). Additionally, the Australian Diabetes Society 2011 National Clinical Care Guidelines for Type 1 Diabetes management use Ismail 2010 and Winkley 2006 to support the recommendation that “education and psychological support are an essential component of standard diabetes care” (15).

**Education and training:** Researchers at KCL have contributed to a number of educational outputs. For instance to two level 6 modules for the MSc in Diabetes Primary care, a practical Masters programme for diabetes health professionals such as nurses, GPs, dieticians and diabetologists. These deliver practical skills in assessment of depression and communication style to elicit psychological barriers to self management (16). They were also commissioned by the Health Innovation Education Cluster, a collaborative partnership between NHS organisations, academia and industry, to develop an e-learning module for depression and diabetes. This is available for free to all NHS staff as is Continuing Medical Education accredited. Over 100 diabetes health professionals (GPs, diabetologists and nurses) in the South London network have used them (17). Further, KCL research has been used in a clinical handbook aimed at healthcare professionals: Educating Your Patients With Diabetes. Here, Ismail 2004 is used to back up that “specialist educational interventions aimed at improving self-care have proven to be effective for different target populations” (18).

**Public reach:** KCL work has reached public awareness through the third sector partner ThamesReach, a charity for homeless and vulnerable people, who published a feature article on 3DFD (19) and a YouTube presentation by Prof Ismail on Diabetes and Psychiatry to the Oxleas

NHS Foundation Trust that has been used by patients and medical students to get a better understanding of depression in diabetes (20).

**5. Sources to corroborate the impact** (indicative maximum of 10 references)

1. King's College Hospital psychotherapy service for diabetes:  
<http://www.londondiabetes.nhs.uk/services-and-referrals/psychotherapy/kings-college-hospital-psychotherapy-service.aspx>
2. NHS Diabetes and Diabetes UK on 'Emotional and Psychological Support and Care in Diabetes. 2010:  
[http://www.diabetes.org.uk/Documents/Reports/Emotional\\_and\\_Psychological\\_Support\\_and\\_Care\\_in\\_Diabetes\\_2010.pdf](http://www.diabetes.org.uk/Documents/Reports/Emotional_and_Psychological_Support_and_Care_in_Diabetes_2010.pdf)
3. NHS Confederation. Investing in emotional and psychological wellbeing for patients with long-term conditions. 18/04/2012:  
[www.nhsconfed.org/Publications/Documents/Investing%20in%20emotional%20and%20psychological%20wellbeing%20for%20patients%20with%20long-term%20conditions%2018%20April%20final%20for%20website.pdf](http://www.nhsconfed.org/Publications/Documents/Investing%20in%20emotional%20and%20psychological%20wellbeing%20for%20patients%20with%20long-term%20conditions%2018%20April%20final%20for%20website.pdf)
4. Centre for Mental Health. Liaison psychiatry in the modern NHS. 2012:  
[www.centreformentalhealth.org.uk/pdfs/liaison\\_psychiatry\\_in\\_the\\_modern\\_NHS\\_2012.pdf](http://www.centreformentalhealth.org.uk/pdfs/liaison_psychiatry_in_the_modern_NHS_2012.pdf)
5. 3DFD service: <http://www.londondiabetes.nhs.uk/services-and-referrals/3dfd-project.aspx>
6. Think public report on 3DFD: [http://www.kcl.ac.uk/iop/depts/pm/people/acaprof/3DFD-report-\(1\).pdf](http://www.kcl.ac.uk/iop/depts/pm/people/acaprof/3DFD-report-(1).pdf)
7. 2011 Quality in Care Awards: Best for Community Initiative:  
[http://www.qualityincare.org/awards/diabetes/qic\\_diabetes\\_results/qic\\_diabetes\\_2011\\_results/community\\_initiative\\_of\\_the\\_year](http://www.qualityincare.org/awards/diabetes/qic_diabetes_results/qic_diabetes_2011_results/community_initiative_of_the_year); Best programme for specialist groups. Health Inequalities:  
[http://www.qualityincare.org/awards/diabetes/qic\\_diabetes\\_results/qic\\_diabetes\\_2011\\_results/best\\_programme\\_for\\_specialist\\_groups](http://www.qualityincare.org/awards/diabetes/qic_diabetes_results/qic_diabetes_2011_results/best_programme_for_specialist_groups); Integrated Care Initiative:  
[http://www.qualityincare.org/awards/diabetes/qic\\_diabetes\\_results/qic\\_diabetes\\_2011\\_results/best\\_integrated\\_care\\_initiative](http://www.qualityincare.org/awards/diabetes/qic_diabetes_results/qic_diabetes_2011_results/best_integrated_care_initiative)
8. Evidence of regional translation by Hillingdon Clinical Commissioning Group (on request)
9. Diabetes UK and NHS Diabetes: Mind the Gap report.  
[www.diabetes.org.uk/Documents/Reports/Minding\\_the\\_Gap\\_psychological\\_report.pdf](http://www.diabetes.org.uk/Documents/Reports/Minding_the_Gap_psychological_report.pdf)
10. ADaPT Appendix 6, CBT manual (2010):  
[http://www.journalslibrary.nihr.ac.uk/\\_\\_data/assets/pdf\\_file/0004/58702/Appendices-hta14220.pdf](http://www.journalslibrary.nihr.ac.uk/__data/assets/pdf_file/0004/58702/Appendices-hta14220.pdf)
11. UK Consensus Conference on Diabetes. Royal College of Physicians of Edinburgh, 13–14 May 2010: [http://www.rcpe.ac.uk/sites/default/files/files/supplement\\_17.pdf](http://www.rcpe.ac.uk/sites/default/files/files/supplement_17.pdf)
12. Canadian Diabetes Association Guidelines. Robinson DJ, et al. Diabetes and Mental Health. Canadian J Diabetes 2013;37(Supp1):S87-92: <http://dx.doi.org/10.1016/j.jcjd.2013.01.026>
13. Canadian Diabetes Association Guidelines. Jones H, et al. Self Management Education. 4. Canadian J Diabetes 2013;37(Supp1):S26-30: <http://dx.doi.org/10.1016/j.jcjd.2013.01.015>
14. International Diabetes Federation, Clinical Guidelines Task Force. Global Guideline for Type 2 Diabetes. 2012: <http://www.idf.org/sites/default/files/IDF-Guideline-for-Type-2-Diabetes.pdf>
15. Australian Diabetes Society. 2011: National Evidence-Based Clinical Care Guidelines for Type 1 Diabetes in Children, Adolescents and Adults:  
<http://www.apeg.org.au/portals/0/guidelines1.pdf>
16. Courses:  
[www.londondiabetes.nhs.uk/resources/courses/kingspsychologicalinterventions\(1\).pdf](http://www.londondiabetes.nhs.uk/resources/courses/kingspsychologicalinterventions(1).pdf)
17. Health Innovation Education Cluster e-learning:  
<https://slondonhiec.org.uk/sites/default/files/files/The%20depression%20in%20diabetes%20link.pdf>
18. Educating Your Patient with Diabetes (Contemporary Diabetes). Eds: Weinger K, Carver CA. Humana Press. 2009 edition. ISBN-10: 161737878X. Chapter 1. Living with diabetes: the role of diabetes education. Pgs 3-14.
19. Thames Reach: [www.thamesreach.org.uk/publications/news-reach-newsletter/?assetdetesctl1099526=24878](http://www.thamesreach.org.uk/publications/news-reach-newsletter/?assetdetesctl1099526=24878)
20. Diabetes and Psychiatry presentation. 15.4.2013: [www.youtube.com/watch?v=F3fkMi\\_B108](http://www.youtube.com/watch?v=F3fkMi_B108)