

## Research Article

# Can Behavioural Activation Be Used As An Alternative Treatment For Subthreshold Depression In Type 2 Diabetes?

**Sheila Hardy**

Senior Research Fellow, Northamptonshire Healthcare NHS Foundation Trust; Honorary Senior Lecturer, UCL, UK

**Badriya Khalifa Al Shamari**

Director of Nursing, Hamad Medical Corporation, Qatar

**Mariam Nooh Q.H. Al-Mutawa**

Executive Director of Nursing, Hamad Medical Corporation, Qatar

**Jesveena Mathias**

Nurse Educator, Hamad Medical Corporation, Qatar

**David Ekers**

Senior Lecturer Psychological Therapy Research, Mental Health Research Group, School of Medicine, Pharmacy and Health Durham University; Nurse Consultant, Tees Esk and Wear Valleys NHS FT, UK

**Judith Gellatly**

Research Fellow, The University of Manchester, UK

**Natalie Figgins**

Assistant Area Team Manager, Central East Community Mental Health Team, Manchester Mental Health and Social Care Trust, UK

**Richard Gray**

Professor and Assistant Executive Director – Research, Hamad Medical Corporation; University of South Australia

## ABSTRACT

Subthreshold depression is common in people with type 2 diabetes and is an important risk factor for poor health. Collaborative care is the suggested approach for people with long term conditions and persistent subthreshold depression, with a high-intensity psychological intervention being the recommended treatment. However, there is little evidence that a high-intensity psychological intervention improves subthreshold depression in people with type 2 diabetes.

Additionally, its use as a treatment in day to day practice can be difficult and expensive to organise even when a collaborative care approach is utilised. Behavioural activation delivered by the patients' usual diabetes care giver as a treatment for subthreshold depression could be an effective alternative.

**MeSH Headings/Keywords:** Subthreshold depression, diabetes.

## Introduction

Type 2 diabetes is a prevalent long term condition. To control their condition well, people with diabetes need to learn how to self-manage their lifestyle behaviours [1]. Depression is common in people with diabetes [2]. This co-morbidity can lead to significantly poorer health outcomes and reduced quality of life [3]. People with both diabetes and depression are more likely to have poor control of their glycated haemoglobin and are less likely to eat a healthy diet, exercise and take their prescribed medication compared with those who are not depressed [4]. They are also more at risk of developing adverse complications of diabetes, for example microvascular and macrovascular disease [5]. Therefore, populations at high risk of depression, such as those with diabetes, should be screened for depression and offered treatment [6]. There is evidence to suggest that the effectiveness of depression treatments is poorer in people with diabetes compared with those who do not have diabetes [7]. Total health care costs might be increased by up to 45% for each person because of a long-term condition and

co-morbid mental health problem. The aim of this paper is to look at whether behavioural activation could be an alternative to high-intensity psychological interventions as a treatment for subthreshold depression in people with diabetes.

**Subthreshold depression and diabetes:** People with subthreshold depression will have experienced more than two and less than five depressive symptoms which are present most or all of the time, for at least 2 weeks in duration, and be associated with evidence of social dysfunction [8]. These symptoms are the same as those identified by the criteria as defined by DSM-V for major depression where at least five out of nine depression symptoms need to be present [9]. It is thought around eight percent of people with subthreshold depression progress to major depression within two years of developing symptoms [10,11] carried out a meta-analysis of 42 published studies that included 21,351 adults with diabetes. They found the prevalence of mild or subthreshold depression was 20% compared to nine percent of those without diabetes. In practice this means that out of every five patients with diabetes,

one will have mild or subthreshold depression [12]. Using this information, the number of people with diabetes who may have mild/subthreshold depression can be calculated in each country. For example, in the United Kingdom the population is 64,100,000 [13] and the prevalence of diabetes is 4.5%; so there are 2,884,500 people with diabetes of which 576,900 are likely to have mild/subthreshold depression. It is estimated that 8.5% of world's population (360 million people) are living with diabetes [14], accordingly that's 72 million people who have diabetes and mild/subthreshold depression in the world.

Despite subthreshold depression being so prevalent in type 2 diabetes, it is often overlooked by clinicians [15]. This has implications for patients. A prospective community study of 1,064 patients with type 2 diabetes concluded that recurrent subthreshold depression could be an important risk factor for poor health outcomes in this group [16]. The authors recommend early treatment of recurrent subthreshold depressive symptoms to improve functioning and quality of life in people with type 2 diabetes.

**Managing subthreshold depression:** In a study comparing the health care systems of the 11 wealthiest countries, the United Kingdom (UK) was shown to be the best at managing physical and mental long term conditions. Healthcare professionals in the UK follow national guidelines for individual conditions to inform them in the delivery of care. There is guidance for the treatment and management of depression in adults with a chronic physical health problem [17]. The authors recommend collaborative care as an approach and psychological therapy as a treatment for people with persistent subthreshold depressive symptoms. The psychological treatments recommended include individual guided self-help based on the principles of cognitive behavioural therapy (CBT) and computerised cognitive behavioural therapy (CCBT).

**Collaborative care:** Collaborative care is based upon an integrated care model which has been applied in the context of long-term conditions [18]. It is a multi-professional approach, requiring a general practitioner/family physician plus at least one other health professional [18]. There is little evidence that collaborative care is more effective than usual care for treating for subthreshold depression, but the evidence for its effectiveness in depression is robust [19]. However, in practice, there may be limited changes to processes of care if nurses and mental health professionals maintain their physical and mental health role boundaries [20,21]. Subthreshold depression may not be recognised by the nurse treating the patient's diabetes and when it is, it may not be severe enough to meet the criteria for working with the mental health professional. The National Institute for Health and Care Excellence have not fully identified and defined key components of successful collaborative care for depression and long-term conditions. Components such as the category of the clinical staff or the type of therapy included may make a difference. A systematic review and meta-analysis of randomised trials of nurse-led management of depression in patients with long term health problems showed effect size of .43, reasoning that using nurses can play a significant role [22]. An effect size is a quantitative measure of the strength of an intervention [23]. The authors calculated this by using a computer programme with the value ranges of small (0–0.32),

medium (0.33–0.55) and large (0.56 and above). Using a simple and straightforward therapy, such a behavioural therapy, as the psychological component of collaborative care may have a positive result.

**High-intensity psychological interventions for people with diabetes and subthreshold depression:** In England, high intensity psychological interventions are usually offered as 16–20 sessions over six to nine months (as opposed to low intensity which is usually six to eight sessions over 10–12 weeks). A meta-analysis of 18 studies (1913 participants) comparing a psychological treatment of subclinical depression with a control group, showed that psychological therapies may be effective in the treatment of subclinical depression in the general population, and may also reduce the incidence of major depressive disorder [24]. Commonly the psychological interventions used for depression is psychotherapy. The purpose of psychotherapy is to look at worrying thoughts, feelings and behaviour to enable problem solving or improve symptoms. The therapy is usually delivered by a trained therapist who may be a CBT therapist, clinical psychologist, counsellor, nurse, occupational therapist, experienced graduate mental health worker or psychotherapist. In addition to their previous training they will have completed a one-year post-graduate diploma training programme and be accredited by the British Association of Behavioural and Cognitive Psychotherapies (BABCP). The most commonly used techniques are CBT (in depression this usually focuses on cognitive therapy where the person is encouraged to challenge their way of thinking to produce more helpful and realistic thought patterns), interpersonal therapy (IPT – the person is shown how to interact more effectively with others to improve their psychological symptoms), mindfulness-based cognitive therapy (combines the ideas of cognitive therapy with meditative practice) and counselling (allows the person to talk about their problems and feelings in a confidential and trustworthy environment).

There are only two studies that support psychological interventions as a treatment for subthreshold depression in people with diabetes [25] carried out an abridged Cochrane review to summarize and critically evaluate the effectiveness of psychological and pharmacological interventions for depression in patients with both diabetes and depression. Six randomized controlled trials investigated the effects of psychological interventions in depression, but only one specified that they included minor depression [26]. The authors found a considerable beneficial effect of a minimal psychological intervention compared with usual care on the level of depression. A randomized controlled trial published since the Cochrane review [27], tested a psychological intervention (CBT) in people with diabetes and subthreshold depression. They found significant improvement in depressive symptoms and the risk of incident major depression was reduced.

**Can behavioural activation be used as an alternative to high intensity psychological interventions?:** Behavioural therapy is an alternative form of therapy used for depression, which is action based. The patient's unhelpful behaviour is viewed as the problem and the goal is to encourage the development of new helpful behaviours to decrease the unhelpful ones. The authors of a Cochrane review of twenty-five trials

involving 955 participants [28] found low to moderate quality evidence that behavioural and other psychological therapies are equally effective. There is currently a trial in progress to measure the cost and outcome of one example of behavioural therapy (behavioural activation) versus CBT for depression [29].

There is some evidence to suggest that behavioural activation (BA) is an effective treatment for diagnosed depression [30,31]. It is a simple approach focussed upon identifying life changes that have a detrimental impact on psychologically healthy activities and is suitable for delivery by non-specialists. A review of the empirical literature regarding BA has shown that activity monitoring and scheduling are constant components across interventions [32]. People with depression treated with CBT may also have the technique of activity monitoring and activity scheduling included in their treatment package, but these techniques are employed in the framework of a cognitive change model rather than the reinforcement-based model used in BA [33]. Reinforcement is defined generally as any environmental event that makes healthy, antidepressant behaviour more likely. The focus of BA is to take a pragmatic approach, looking at what predicts and maintains an unhelpful behaviour (for example avoiding exercise or taking prescribed medication) and prevents the person from reaching their goal [34]. The role of the therapist in BA is to encourage the person with depression to re-engage in activities, including those which increase experiences of pleasure and accomplishment, solve problems and are meaningful to that person. When the person is deliberating, the therapist seeks to activate alternative healthy behaviours [35] plan to conduct a systematic review to clarify and further develop theoretical underpinnings for the use of BA interventions in depressed individuals with chronic physical illnesses, and to identify adaptations that have been made to BA interventions specifically for this population.

## Discussion

National guidance in the UK recommends high-intensity psychological interventions for subthreshold depression in people with long term conditions. This is despite there being little evidence for people with diabetes that this therapy will improve the symptoms of depression [36,37]. High-intensity psychological interventions are typically delivered by mental health experts who usually only treat people with moderate to severe depression, and there are a large number of people with diabetes and subthreshold depression. Therefore its use as a treatment in day to day practice may be difficult and expensive to organise even when a collaborative care approach is utilised. Psychological interventions require an additional person to the one providing diabetes care. Apart from this being costly, there is the risk of delay or gaps in treatment. Increasing interactions between different professionals and patients may be seen by patients as complicating their illness management [38,39].

To manage their diabetes effectively, the patient is usually required to make changes to their lifestyle and to perform additional behaviours such as blood glucose monitoring and/or taking medication. As BA is a brief intervention suitable for delivery by non-specialists, it could potentially be delivered by the patient's usual diabetes care provider. The encouragement to engage in new helpful behaviours to improve health outcomes

will then be provided by a healthcare professional who has an in-depth understanding of diabetes care. This would be part of the overall delivery of care and would not divide mental and physical treatments [40]. The advantage of this for the patient is that care delivery is uncomplicated and will not have the stigma attached to seeing a mental health professional [41]. Nurses delivering diabetes care can view the person as a whole and deliver BA in relation to the patient's diabetes management as well as their symptoms of subthreshold depression.

## Conclusion

Few research studies have examined the effectiveness of psychological interventions on the treatment of subthreshold, rather than full symptom depression in patients with type 2 diabetes. Behavioural activation delivered by the patients' usual diabetes care giver may be an effective treatment to improve symptoms of subthreshold depression, glycaemic control, quality of life and healthcare costs.

## REFERENCES

1. Funnell M, Anderson R. Empowerment and Self-Management of Diabetes. *Clinical Diabetes* 2004; 22: 123-127.
2. Ali S, Stone M, Peters J. The prevalence of co-morbid depression in adults with Type 2 diabetes: a systematic review and meta-analysis. *Diabet Med* 2006; 23: 1165-1173.
3. Naylor C, Parsonage M, McDaid D. Long-term conditions and mental health: The cost of co-morbidities. London: The King's Fund and Centre for Mental Health 2012.
4. Bogner H, deVries H, O'Donnell A. Measuring concurrent oral hypoglycemic and antidepressant adherence and clinical outcomes. *Am J Manag Care* 2013; 19: e85-e92.
5. Mezuk B, Eaton W, Albrecht S. Depression and type 2 diabetes over the lifespan: a meta-analysis. *Diabetes Care* 2008; 31: 2383-2390.
6. Gilbody S, Sheldon T, House A. Screening and case-finding instruments for depression: a meta-analysis. *Canadian Medical Association Journal* 2008; 178: 997-1003.
7. Lustman P, Clouse R. Depression in diabetic patients: the relationship between mood and glycemic control. *J Diabetes Complications* 2005; 19: 113-122.
8. Juruena M. Understanding subthreshold depression. *Shanghai Archives of Psychiatry* 2012; 24: 292-293.
9. American Psychiatric Association (APA). The Diagnostic and Statistical Manual of Mental Disorders. (5<sup>th</sup> edtn) 2013; (VA) APA Arlington.
10. Cuijpers P, Smit F. Subthreshold depression as a risk indicator for major depressive disorder: a systematic review of prospective studies. *Acta Psychiatr Scand* 2004; 109: 325-331.
11. Andreson R, Freedland K, Clouse R. The prevalence of comorbid depression in adults with diabetes: a meta-analysis. *Diabetes Care* 2001; 24: 1069-1078.
12. Hermanns N, Kulzer B. Diabetes and Depression – A Burdensome Co-morbidity. *European Endocrinology* 2008; 4: 19-22.

13. Office for National Statistics. Population Estimates for the United Kingdom 2013.
14. Diabetes UK. Diabetes Prevalence 2015.
15. Mitchell A, Rao, Vaze A. Can general practitioners identify people with distress and mild depression? A meta-analysis of clinical accuracy. *Journal of Affective Disorders* 2011; 130: 26-36.
16. Schmitz N, Garipey G, Smith K. Recurrent Subthreshold Depression in Type 2 Diabetes: An Important Risk Factor for Poor Health Outcomes. *Diabetes Care* 2014; 37: 970-978.
17. National Institute for Health and Care Excellence. Depression in adults with a chronic physical health problem: Treatment and management 2009.
18. Gunn J, Diggins J, Hegarty K. A systematic review of complex system interventions designed to increase recovery from depression in primary care. *BMC Health Services Research* 2006; 6: 88.
19. Archer J, Bower P, Gilbody S. Collaborative care for depression and anxiety problems. Cochrane Database of Systematic Reviews.
20. Knowles S, Chew-Graham C, Coupe N. Better together? a naturalistic qualitative study of inter-professional working in collaborative care for co-morbid depression and physical health problems. *Implementation Science* 2013; 8: 110.
21. Wells K, Sherbourne C, Schoenbaum M. Impact of Disseminating Quality Improvement Programs for Depression in Managed Primary Care. *JAMA* 2000; 283: 212-220.
22. Ekers D, Murphy R, Archer J. Nurse-delivered collaborative care for depression and long-term physical conditions: A systematic review and meta-analysis. *Journal of Affective Disorders* 2013; 149: 14-22.
23. Kelley K, Preacher K. On Effect Size. *Psychological Methods* 2012; 17: 137-152.
24. Cuijpers P, Koole S, van Dijke A. Psychotherapy for subclinical depression: meta-analysis. *The British Journal of Psychiatry*. 2014; 205: 268-274.
25. Baumeister H, Hutter N, Bengel J. Psychological and pharmacological interventions for depression in patients with diabetes mellitus: an abridged Cochrane review. *Diabetic Medicine* 2013; 31: 773-786.
26. Lamers F, Jonkers C, Bosma H. Treating depression in diabetes patients: does a nurse-administered minimal psychological intervention affect diabetes-specific quality of life and glycaemic control? A randomized controlled trial. *J Adv Nurs* 2011; 67: 788-799.
27. Hermanns N, Schmitt A, Gahr A. The Effect of a Diabetes-Specific Cognitive Behavioural Treatment Program (DIAMOS) for Patients With Diabetes and Subclinical Depression: Results of a Randomized Controlled Trial. *Diabetes Care* 2015.
28. Shinohara K, Honyashiki M, Imai H. Behavioural therapies versus other psychological therapies for depression. The Cochrane Collaboration 2013.
29. Rhodes S, Richards D, Ekers D. Cost and outcome of behavioural activation versus cognitive behaviour therapy for depression (COBRA): study protocol for a randomised controlled trial. *Trials* 2013; 15: 29.
30. Ekers D, Godfrey C, Gilbody S. Cost utility of behavioural activation delivered by the non-specialist. *Br J Psychiatry*. 2011a; 199: 510-511.
31. Dimidjian S, Hollon S, Dobson K. Randomized trial of behavioural activation, cognitive therapy, and antidepressant medication in the acute treatment of adults with major depression. *J Consult Clin Psychol* 2006; 74: 658-670.
32. Kanter J, Puspitasari A, Santos M. Behavioural activation: history, evidence and promise. *The British Journal of Psychiatry* 2012; 200: 361-363.
33. Kanter J, Manos R, Bowe W. What is behavioural activation?: A review of the empirical literature. *Clinical Psychology Review* 2010; 30: 608-620.
34. Veale D. Behavioural activation for depression. *Advances in Psychiatric Treatment* 2008; 14: 29-36.
35. Harris S, Farrand P, Dickens C. Behavioural activation interventions for depressed individuals with a chronic physical illness: a systematic review protocol. *Syst Rev* 2013; 2: 105.
36. Carnethon M, Kinder L, Fair J. Symptoms of depression as a risk factor for incident diabetes: findings from the National Health and Nutrition Examination Epidemiologic Follow-up Study, 1971-1992. *Am J Epidemiol* 2003; 158: 416-423.
37. Davis K, Stremikis K, Schoen C. Mirror, Mirror on the Wall, 2014 Update: How the U.S. Health Care System Compares Internationally. The Commonwealth Fund.
38. Ekers D, Richards D, McMillan D. Behavioural activation delivered by the non-specialist: phase II randomised controlled trial. *Br J Psychiatry* 2011b; 198: 66-72.
39. Gonzalez J, Peyrot M, McCarl L. Depression and diabetes treatment nonadherence: a meta-analysis. *Diabetes Care* 2008; 31: 2398-2403.
40. Katon W, Russo J, Frank E, Barrett J. Predictors of nonresponse to treatment in primary care patients with dysthymia. *Gen Hosp Psychiatry* 2002; 24: 20-27.
41. Rotella F, Mannucci E. Depression as a risk factor for diabetes: a meta-analysis of longitudinal studies. *J Clin Psychiatry* 2013; 74: 31-37.

#### ADDRESS FOR CORRESPONDENCE

Dr Sheila Hardy, Berrywood Hospital, Berrywood Drive, Upton, Northampton, NN5 6UD, UK; Tel: 07500020430, Email: Sheila.Hardy@nhft.nhs.uk

Submitted Sep 29, 2015

Accepted Nov 2, 2015