

# THE IMPACT OF MINDFULNESS INTERVENTIONS ON DIABETES DISTRESS

Acceptance- and mindfulness-based approaches can help improve physical and mental health, but there have been few reports of their application in diabetes care. A new review looks at the current evidence and reveals promising findings on how mindfulness interventions can help alleviate diabetes distress and improve glycaemic control

**E**ffective diabetes management involves many everyday tasks and checks, including attention to diet, physical activity, medication and monitoring. The relentlessness of this routine, together with the effort required to maintain blood glucose targets and worry about diabetes-related complications, often has a negative impact on psychological health and may lead to diabetes distress.

Research suggests that diabetes distress affects over a third of those with type 2 and is associated with difficulties in self-management and higher HbA1c level. Diabetes distress should be helped by psychological interventions and diabetes education, but systematic reviews and meta-analyses have yielded inconclusive results. However, they have suggested that a combined programme of both psychological interventions and diabetes education could improve both diabetes distress and HbA1c levels by enhancing diabetes knowledge and management skills in type 2 diabetes, enabling better coping with the daily ►



## Medicine digest

self-care routine and fear of complications.

These psychological interventions include mindfulness-based cognitive therapy, mindfulness-based stress reduction and acceptance and commitment therapy. These are so-called third-wave cognitive therapies that emphasise awareness and non-judgemental acceptance of thoughts, feelings and sensations happening in the here and now.

Mindfulness- and acceptance-based interventions have been widely used to address psychological problems arising from chronic conditions. In type 2 diabetes, such interventions have been shown to improve sleep quality and symptoms of depression and anxiety.

The literature on the application of mindfulness and acceptance in improving diabetes distress and HbA1c has received little attention to date. That is why Professor Wai Tong Chien and his team from the Nethersole School of Nursing at the Chinese University of Hong Kong, have carried out a new systematic review and meta-analysis which aims to look at the best available evidence on the impact of mindfulness- and acceptance-based interventions on diabetes distress, glycaemic level, self-management and other psychological outcomes in adults with type 2 diabetes.

### Study details

The researchers collected papers from a range of databases up to late June

2020. They selected those mentioning any intervention for people with type 2 diabetes that included mindfulness or acceptance training as the main component and that aimed to reduce emotional distress by developing skills such as focusing on the present moment, raising awareness and enhancing acceptance. The primary outcomes were diabetes distress and glycaemic level. Secondary outcomes included diabetes self-management and psychological symptoms, such as depression, anxiety and stress.

Data extraction and methodological quality assessment were carried out independently by two of the authors, with the third settling any disagreements. The quality of evidence was rated by assessing the overall risk of bias, inconsistency, indirectness and imprecision of the primary outcome finding. It was rated as 'high', 'moderate', 'low' or 'very low'.

Initially, just over 1,300 articles were retrieved, of which just 30 were selected for a full evaluation. Of these, 15 were excluded for various reasons, such as not having a randomised controlled trial (RCT) design or not including diabetes distress or glycaemic level as an outcome. The 15 studies, including nine RCTs, that were eventually subjected to full analysis turned out to have substantial methodological flaws for various reasons, such as missing outcome data. The researchers were still able to extract some meaningful information from the nine RCTs that they focused on.

The studies were conducted in Australia, Iran, Korea, the Netherlands and the United States. A total of 801 participants were included, with the sample size per trial ranging from 56 to 139. In seven of the studies, all participants had type 2 diabetes, while the other two included some with type 1 diabetes. The mean age of participants ranged from 53.8 to 66.3 years. Most had a diabetes duration of more than 10 years and an HbA1c greater than 53mmol/mol.

Four of the trials evaluated acceptance and commitment therapy, while the others looked at mindfulness-based interventions, including mindfulness-based stress reduction, mindfulness-based cognitive therapy and self-directed mindfulness. In all but two of the studies, the interventions were delivered in a group-based, therapist-led format. The acceptance and commitment interventions varied in duration from a one-day workshop to eight or 10 weekly sessions. The mindfulness interventions were all delivered over an eight-week period.

The impact of the interventions was determined by comparing measurements at baseline and up to six months post-intervention. Finally, the interventions were all delivered by nurses, psychologists or psychiatrists who had all had relevant training and experience.

### Impact of mindfulness

Analysis of the five studies that assessed diabetes distress revealed a non-significant reduction among participants who received mindfulness- or acceptance-based interventions, occurring immediately or up to a month after the intervention. The results reached significance when one of the studies was left out of the analysis.

Turning to individual studies, it was notable that a trial comparing acceptance and commitment therapy with routine diabetes education yielded a moderate-to-large reduction of diabetes distress at all time points up to eight weeks after the intervention.

Four of the studies evaluated glycaemic level and analysis of these showed that acceptance and commitment therapy, mindfulness-based cognitive therapy and self-directed mindfulness reduced HbA1c up to one month after intervention, the best of them – involving acceptance and commitment therapy – reporting a moderately significant effect three to six months post-intervention.



Four of the studies used the Summary of Diabetes Self-Care Activities Measure to evaluate the impact of the intervention on self-management. One failed to report the overall score and, of the other three, none demonstrated any significant impact of the intervention compared with diabetes education.

Three of the studies of mindfulness-based cognitive therapy and self-directed mindfulness practice did reveal significant reductions in anxiety and depression symptoms, but not on stress.

In other outcomes, four of the studies assessed the participants' acceptance of their diabetes compared with diabetes education. Only one, acceptance and commitment, showed an improvement. Studies also measured secondary outcomes such as diabetes knowledge, general wellbeing, treatment satisfaction, blood pressure and vascular inflammation. The main finding was that mindfulness-based cognitive therapy was more effective than usual care in improving general wellbeing.

## Discussion

This meta-analysis of the effects of acceptance- and mindfulness-based interventions on diabetes distress, HbA1c and other diabetes-related outcomes in type 2 diabetes sheds new light on this approach. These interventions may more effectively reduce diabetes distress and HbA1c with small to medium effect sizes than diabetes education or usual care,

both immediately and up to a month post-intervention.

The mechanism underlying these positive effects remain unknown. However, neurophysiological studies have shown that focusing attention on the here and now could potentially alter the function of the prefrontal cortex, which could help limit excessive food consumption. Moreover, cultivating an attitude of mindfulness and acceptance may help people with type 2 diabetes improve their eating behaviour and other aspects of diabetes management.

outcomes, these interventions – particularly mindfulness-based cognitive therapy – are capable of effectively reducing symptoms of depression and anxiety. We already know that mindfulness-based cognitive therapy helps individuals with recurrent depression to increase awareness of negative thinking and to disengage from these. This may explain the findings.

The authors say that inconsistencies noted between the effects of the interventions might be because these showed considerable heterogeneity.

**“The findings show positive short-term effects of acceptance- and mindfulness-based interventions on diabetes distress, HbA1c and psychological symptoms in people with type 2 diabetes”**

The authors note that they tested the robustness of their meta-analysis by performing the leave-one-out approach mentioned above. This shifted the impact of interventions on diabetes distress from statistically insignificant to significant. The study that was left out involved self-directed mindfulness, while the others were therapist-led. It may be that interactions between participants and therapists enhance the impact of acceptance- and mindfulness-based interventions in this context.

When it comes to secondary

For instance, in studies that involved eight weekly sessions, the total number of intervention hours actually varied from four to 20 hours, which might have impacted the findings. Moreover, although most of the therapist-led studies were guided by intervention manuals, it is important that the therapists had recognised professional training as well as personal mindfulness experience. Otherwise, there would not be much difference between a mindfulness- or acceptance-based intervention and diabetes education.

Most of the interventions in these studies encouraged daily home practice of the mindfulness skills to enhance sustainability of the therapeutic effects. A previous review of 14 studies shows that home practice with CD or video and a logbook has a positive impact on insomnia or psychological disorders compared with usual care.

## Looking forward

This review has implications for future research in this area. The findings show positive short-term effects of acceptance- and mindfulness-based interventions on diabetes distress, HbA1c and psychological symptoms in people with type 2 diabetes. We now need more research to determine the impact of such interventions in the medium and long term and in more diverse and larger populations.

The findings also reveal wide variation in the structure, doses and main characteristics of the interventions. It would be worthwhile developing a carefully designed and standardised intervention protocol for use in clinical settings. The authors suggest the commonly used acceptance and commitment therapy protocol developed by Gregg et al, which can be used to

help people set diabetes self-management goals as well as addressing diabetes distress.

And future randomised controlled trials in this area should aim for more robust methodological design. Further research is also needed to explore the therapeutic components and mechanisms that underlie the benefits of these interventions. Other factors, such as treatment modality, duration and stage of diabetes and adherence to practice of the interventions should also be investigated. And, finally, a shortage of fully trained therapists may limit the more widespread application of the mindfulness approach to diabetes care. It would therefore be worthwhile trying to integrate acceptance and commitment therapy requiring less formal training into diabetes education as part of usual diabetes care.

**i This is a digested version of Ngan H, Chong Y and Chien W (2021). Effects of mindfulness-and acceptance-based interventions on diabetes distress and glycaemic level in people with type 2 diabetes: Systematic review and meta-analysis. Diabetic Medicine 38(4) e14525. To download the paper, go to <https://doi.org/10.1111/dme.14525>**