**Editorial: How psychosocial and behavioural research has shaped our understanding of diabetes**

This special issue of *Diabetic Medicine* is dedicated to psychosocial research in diabetes, celebrating 25 years of the PsychoSocial Aspects of Diabetes (PSAD) Study Group of the European Association for the Study of Diabetes (EASD). It includes 14 papers providing an overview of the broad scope and depth of behavioural and psychosocial research over the past quarter of a century. Three of these papers will be presented during the *Diabetic Medicine* symposium at this year’s Diabetes UK Professional Conference in Glasgow on 20 March [1-3].

In 1994, Bradley summarised the contributions of psychology to diabetes management as: (a) measurement of psychological outcomes and processes, (b) optimising blood glucose monitoring and (c) stress management, with two further applications regarding weight management and psychological treatments for sexual dysfunction [4]. At that time, most of the behavioural and psychosocial research in diabetes had been conducted in North America. Meanwhile many researchers in continental Europe were engaged in translating and subsequently validating psychological measures that had been developed in the English language. Using these validated questionnaires, the focus shifted towards obtaining a better understanding of the behavioural, affective and cognitive factors that influence diabetes self-care, including mental health issues associated with diabetes such as depression. However, studies were characterised by correlational designs and often included small sample sizes.

In the mid-late 1990s, the results of the Diabetes Control and Complications Trial (DCCT) and the UK Prospective Diabetes Study (UKPDS) showed that intensive diabetes management could reduce the onset of diabetes complications without compromising quality of life [5,6]. Although these conclusions were challenged [e.g. 7], this triggered a flurry of publications on both sides of the Atlantic aimed at translating behavioural and psychosocial findings into practical clinical interventions [8]. Another impetus was the realisation that diabetes education, which was predominantly based on knowledge transfer alone, was insufficient to achieve and sustain behaviour change [9]. While initial behavioural interventions aimed to improve medication taking and other aspects of self-care, the focus of behavioural diabetes interventions shifted towards empowerment and a more person‑centred approach [8], with the healthcare professional supporting the person with diabetes to explore other ways of dealing with their condition. While many healthcare professionals now embrace this approach, it is, even today, by no means universally accepted and applied.

In the first paper of this special issue, Frank Snoek, one of the founders of PSAD and its inaugural Chair from 1995-2004, reflects on his experiences of establishing PSAD as an official study group of the EASD. He also considers how the group has developed over the past 25 years “raising awareness of the importance and opportunities … as well as further improving the quality and dissemination of behavioural diabetes research” [1].

Each of the remaining thirteen papers follows a specific structure. They begin by describing the importance of the issue and reminding us of the evidence base 25 years ago. They go on to report what the past 25 years of research has shown us and the extent to which this evidence has been put into clinical practice, before ending with current gaps and directions for future research.

The first set of reviews concern generic and diabetes-specific mental health issues. Arguably, depression has received most attention but diabetes distress, disordered eating and fear of hypoglycaemia have also attracted considerable research interest. In their paper, Pouwer et al. [10] show that our knowledge of the importance of depression has increased greatly. Not only does diabetes increase the risk of developing depression, but depression is a risk factor for the development of type 2 diabetes. Perhaps the most important research finding over the past 25 years is that clinical depression, but also sub-clinical depression (depressive symptoms), can have serious consequences among people with diabetes, including sub-optimal self-care, increased diabetes complications, cognitive decline and dementia, and mortality. Current treatments for depression are effective not only in reducing depressive symptoms but also HbA1c levels. However, despite a large number of studies, the underlying mechanism of depression in diabetes remains elusive.

Skinner et al. [11] address diabetes distress, which refers to ‘the negative emotional or affective experience resulting from the challenge of living with the demands of diabetes’. Diabetes distress has been discussed frequently in the context of depression and there is still debate whether it is a separate condition or part of a continuum: from worry and distress of being diagnosed and having to live with and care for diabetes to full-blown depression. They also highlight the potential impact of health professionals’ communication on diabetes distress. Broadley et al. [12] describe the difficulties defining disordered eating in diabetes and the risk factors involved. Disordered eating is especially prominent in young women with type 1 diabetes or type 2 diabetes, but also in men, especially in those with type 1 diabetes. Hendrieckx et al. [13] show that the past 25 years, especially with the advancement of continuous glucose measurement (CGM), has seen a substantial increase in our understanding of the impact of hypoglycaemia on a person’s emotional well-being, and of the modifiable psychological and behavioural risk factors underlying severe hypoglycaemia. Moreover, cognitive-behavioural interventions are effective in preventing and managing (severe) hypoglycaemia.

The second set of reviews addresses behavioural factors affecting diabetes self-management including the role of sleep [14] and medication taking [15], diabetes self-management education programmes [16], and diabetes technologies [3]. Nefs et al. [14] show a bi-directional relationship between disturbed sleep and diabetes. Diabetes and concomitant factors can adversely affect sleep, while insufficient or excessive sleep can increase the risk of negative diabetes outcomes. Winkley et al.’s review [15] shows a broad range of underlying psychosocial factors (such as fear of negative consequences and perceptions of medications as ineffective) are implicated in sub-optimal medication taking among people with type 2 diabetes. Interestingly, fewer psychological barriers have been encountered regarding newer medications, such as GLP-1 receptor agonists, despite being administered by injection. However, only a small number of studies have been conducted in this area.

Reviewing the efficacy of diabetes self-management education interventions, Hermanns et al. [16] conclude that diabetes education that emphasises self-management and empowerment strategies is efficacious in improving a range of outcomes among adults, including HbA1c, depression, diabetes distress and psychosocial predictors of behaviour – though the long-term effects in adults, and the effects in children and adolescents, are generally smaller. Kubiak et al. [3] reviewed the psychosocial aspects of using modern diabetes technologies, e.g. for the delivery of insulin (CSII), glucose monitoring (CGM), and automated insulin delivery systems (hybrid closed loop). While psychosocial research in this area is still in its infancy, studies have shown that these technologies improve psychosocial outcomes compared to insulin injections and capillary glucose monitoring. However, many psychosocial barriers exist also, and the human functional aspects of these technologies require further attention before their use will become widespread.

This set of reviews is completed by two papers focusing more broadly on the concepts of motivation and behaviour change. McSharry et al. [17] argue that, to be successful, behaviour change interventions need to be grounded on a sound theoretical framework. They describe a number of recent developments in theoretical approaches to behaviour change and provide examples of how these have been applied to diabetes. While this paper concerns the tools and techniques that clinicians and policy makers can apply to improve interventions to enable behaviour change, it does not address whether the intended recipients of such interventions (i.e. people with diabetes) are interested in or motivated to change their behaviour. Lakerveld et al. [18] review two key motivational concepts, namely self-efficacy and self-determination, which have been used increasingly in behavioural diabetes self-management intervention strategies. However, more recent research has shown that motivation for diabetes self-care, and especially dietary self-care, may be compromised by the damaging effects of diabetes on the brain and the omnipresent availability of energy dense foods in our ‘obesogenic’ environment.

Caring for diabetes does not occur in a vacuum but affects the complex fabric of social, spousal and familial relations. In turn, the social context is of great importance for clinical, behavioural and psychological outcomes. Therefore, the final set of reviews in this special issue concerns the context and lived experience of people with diabetes. De Wit et al. [2] examine the role of the social and family context, which can have both a positive influence through social support and resilience building, and negative influence through stigma and discrimination. Speight et al. [19] discuss the assessment of the impact of diabetes on quality of life. While quality of life is an important outcome and, typically, compromised in people with diabetes, there is still no consensus about its definition, and consequently its assessment. Despite the fact that people with diabetes value its assessment, quality of life is not routinely assessed in clinical practice or clinical trials. The final paper concerns the voice of the person with diabetes. Proposing a new framework for conducting and reporting qualitative research, Stuckey and Peyrot [20] show that the most prevalent comments from people with diabetes concern the difficulties and challenges of living with diabetes, and having to deal with the negative judgements of others, including healthcare professionals. Positive comments arise when challenges are met successfully, and when receiving support from family, friends and other people with diabetes.

The conclusions and recommendations made in these reviews reflect the interpretations and opinions of their authors, most of whom are PSAD members; they do not reflect an official position of the PSAD Study Group nor of the EASD. Also, it was not possible to cover all the psychosocial issues related to diabetes in this special issue. Specifically, topics such as anxiety, cognitive decline and dementia, pain, psychosis, sexual dysfunction and the psychology of preventing and coping with other diabetes-related complications have also been researched in the past 25 years. Where possible, the reviews take a lifespan approach and include all relevant types of diabetes, but some are limited by the available research.

*Diabetic Medicine* is proud to devote this special issue, and its symposium at the 2020 Diabetes UK conference, to marking the 25th anniversary of the PSAD Study Group of the EASD. The journal embraces the importance of this field of research and welcomes further empirical and review papers to expand our knowledge of the psychosocial and behavioural aspects of diabetes in the future, ultimately to improve the health, healthcare experiences and quality of life of people with diabetes. As Snoek remarks, “the journey continues” [1].

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