review article

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REVIEW ARTICLE

# The potential for motivational interviewing to improve outcomes in the management of diabetes and obesity in paediatric and adult populations: a clinical review

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Having good intentions to engage in healthy behaviours, to change our lives in a positive direction and make substantial, lasting changes may not always translate into actions or behaviour that is maintained. Motivational Interviewing is a directive person-centred approach designed to explore ambivalence and activate motivation for change [Miller WR, Rollnick S. Motivational Interviewing: Preparing People to Change Addictive Behaviour. London: Guilford Press, 1991]. A key component of a motivational interviewing conversation is to acknowledge that clients have every right to make no change. It uses a guiding communication style which invites people to consider their own situation and find their own solutions to situations that they identify as problematic that are preventing change. Motivational Interviewing was first introduced in adult health addiction services in the early 1980s. It has developed in the physical health specialties, and in the last 20 years or so attention has turned to the potential of Motivational Interviewing in the paediatric setting and the challenges of using it in families with children at differing ages and developmental stages. This article summarizes studies published from 2006 to 2011 of Motivational Interviewing in individuals across the lifespan with type 1 and type 2 diabetes and obesity.

**Keywords:** obesity therapy, treatment guidelines, type 1 diabetes, type 2 diabetes

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## Introduction

### What is Motivational Interviewing?

Having good intentions to engage in healthy behaviours, to change our lives in a positive direction and make substantial, lasting changes may not always translate into actions or behaviour that is maintained. For children and adults struggling to manage their weight or keep diabetes under control the changes required can appear simple for example; following a healthy diet, regular self-monitoring and exercise. However, clinicians working with an individual struggling with weight or diabetes can often find themselves thinking 'if only they would just.....', 'do their injections', 'take more exercise', 'stop worrying' or simply 'just LISTEN'. These demands are also voiced by parents and partners with a gap between the 'ideal' as we see it and 'reality'; a gap between what people 'know' and what they 'do'. The process that maintains the gap between knowledge and behaviour is ambivalence. Individuals are faced with conflicting motivations and pressures; the change feels too big, the rewards too distant, the personal or financial costs too high or maybe it was never their idea to change in the first place.

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Motivational Interviewing is a directive person-centred approach designed to explore ambivalence and activate motivation for change [1]. A key component of a motivational interviewing conversation is to acknowledge that clients have every right to make no change. It uses a guiding communication style which invites people to consider their own situation and find their own solutions to situations that they identify as problematic that are preventing change [2]. The patient's view is elicited by the clinician in order to help them understand the situation from the client's perspective including their goals and values. This is a collaborative approach in which the expertise of the practitioner plays a part but it is the patient's journey as they decide where to go and how to get there. The practitioner uses their knowledge and skills to guide the process, connecting what they know about diabetes or weight loss with the goals of the patient to facilitate positive change but always respecting the patient's autonomy. Motivational interviewing 'rolls' with resistance that is created when individuals are advised or told what to do. The message is communicated to the client that it is up to them to decide what to do. Paradoxically by acknowledging that they have every right to make no change, the patient may subsequently then find themselves making the first move towards changing their behaviour.

### Motivational Interviewing in Health Settings

Motivational Interviewing was first introduced in adult health addiction services in the early 1980s [3]. It has developed in the

physical health specialties, particularly in relation to chronic health conditions [2]. As the evidence-base for Motivational Interviewing has grown[4–7], the ideas have been refined in the context of counselling relationships and also in connection to other practitioner–patient relationships (e.g. nurse, doctor, dietician) [8]. In the last 20 years or so attention has turned to the potential of Motivational Interviewing in the paediatric setting and the challenges of using it with families with children at differing ages and developmental stages[9,10].

This article summarizes studies published from 2006 to 2011 of Motivational Interviewing in individuals across the lifespan with type 1 diabetes (T1D) and type 2 diabetes (T2D) and obesity. A combination of terms was used to search including: *Motivational Interviewing, motivational enhancement, diabetes, obesity, hypertension, lifestyle, nutrition, diet* and *physical activity* Studies were identified using electronic data bases: Google Scholar, PubMed, Web of Science, Medline and PsychINFO. The article is not a systematic review therefore further hand searching was not carried out and it is possible that some studies may have been missed. It draws on the extensive clinical and research experience of the two authors

The studies are summarized in four sections; adult obesity and lifestyle changes, paediatric obesity, adult diabetes and finally paediatric diabetes to illustrate the different ways Motivational Interviewing has been used in these different populations.

## Motivational Interviewing and adult obesity

*Motivational Interviewing Alone.* Motivational Interviewing was used with positive results as a standalone intervention in one study. Four sessions of Motivational Interviewing led to significant improvements in body mass index (BMI) and self-efficacy in overweight and obese women compared to a waiting list control [11].

*Motivational Interviewing as an Adjunct Treatment.* In the last few years, Motivational Interviewing has increasingly been used as an adjunct to other approaches. Group Motivational Interviewing as part of a behavioural weight loss programme for 40 overweight/obese women produced higher reductions in body weight and BMI than controls [12]. In studies with sample sizes ranging from 22 to 55 individualized Motivational Interviewing for participants experiencing weight loss difficulties on a behavioural weight loss programme resulted in re-engagement in the programme, weight loss and increases in weekly exercise [13]. Motivational Interviewing as part of a group-based behavioural obesity treatment for overweight African-American and Caucasian women with T2D produced more weight loss in both ethnic groups at 6 and 18 months than those randomized to an attention control group. Weight loss was mediated by enhanced adherence to the behavioural weight loss programme. Although the African-American participants lost weight at 6 months they did not show the same level of maintenance at 18 months compared to the Caucasian women [14].

Motivational Interviewing as part of cognitive-behavioural treatments (CBT) or standard-guided self-help produced weight loss maintained over a 12-month period. The weight loss was accompanied by improvements in obesity-related quality of life, impulsive eating tendencies, areas of eating concern and control over eating, body dissatisfaction and maladaptive cognitions [15,16].

Motivational Interviewing can also facilitate positive results in weight management in some specific at risk group. Patients with severe mental illness carry a greater prevalence of risk factors for cardiovascular disease including obesity. [17] In studies with patients with schizophrenia who are overweight/obese and patients with severe mental illness, Motivational Interviewing in combination with education has shown positive life style changes and weight loss [18,19].

Motivational Interviewing has also been shown to produce improvements in lifestyle changes associated with weight management including physical activity, stage of change and social support in disadvantaged community participants [20] and physical fitness and lipid profiles scores in university faculty [21]. The inclusion of Motivational Interviewing in healthy lifestyle training for controlling and preventing high-blood pressure in both men and women was effective in maintaining medication adherence, decreasing blood pressure and decreasing dangerous factors in cardiovascular diseases as a consequence as persist over time [22,23].

Results are not always positive, however. Buscemi found one session of brief Motivational Interviewing delivered by graduate students with 20 h of training in motivational interviewing had no impact on 35 obese US college students at 3 months [24]. Motivational Interviewing had the same impact on motivational stage of change and BMI when compared to a relaxation intervention added to an aerobics programme [25]. Motivational Interviewing added to a Behavioural Weight Loss Programme for 22 overweight African-American Women did not improve weight loss, increasing fruits and vegetables consumption, reducing energy intake or percent calories from fat compared to relaxation or health education sessions [26,27]. The addition of Motivational Interviewing to an online chat forum failed to increase weight loss in an internet based Behavioural Weight Loss Programme [28–30].

Motivational Interviewing has potential in supporting weight management programmes in a number of different adult populations. Twice as many studies report positive results, either as a stand alone treatment or as an adjunct to other approaches, compared to studies that fail to show motivational interviewing as an effective intervention. In the majority of studies Motivational Interviewing is effective in helping change underlying behaviours associated with weight management as well as ultimately influencing weight loss.

## Paediatric Obesity

The American Academy of Paediatrics systematic review of interventions for paediatric obesity [31] identified a significant increase in published research in motivational interviewing and identified six studies that have included Motivational Interviewing alone or as part of an intervention for obesity in children and adolescents. The results of all these studies have been mixed.

In the Healthy Lifestyles intervention brief Motivational Interviewing was delivered as part of clinical practice by registered dieticians and/or paediatricians [32]. The overall results

were not significant, however, a change in BMI was related to the amount of Motivational Interviewing intensity at six months follow-up and parents reported that the intervention helped them think about changing their family's eating habits [33]. In a 6-month pilot study using Motivational Interviewing principles to deliver evidence-based guidelines in primary care to 50 families with children aged 5–18, there was a trend towards lower BMI although the children found it difficult to maintain behaviour change [34]. In one of the larger studies, albeit non-randomized, Kelishadi provided an office based 24-week motivational lifestyle modification trial for 457 children. It included the three components of exercise, diet education and behaviour modification provided by a paediatrician, two general physicians and a nurse. Completion rates were extremely high (98%). Anthropometric measures and cardio metabolic risk factors decreased significantly. Mean high-density lipoprotein cholesterol (HDL-C) increased significantly, the prevalence of the metabolic syndrome decreased from 20.8 to 1.8%. Triglycerides, low-density lipoprotein cholesterol (LDL-C), diastolic blood pressure had the highest decrease in all age groups, with the most prominent changes in the 14–18-year age group [35]. In contrast to this study, a randomized controlled trial (RCT) of motivational interviewing-based educational modules focusing on watching television (TV), fast food and sugar-sweetened beverage intake delivered by paediatricians to 475 children aged 2–6 only succeeded in reducing watching TV at 12 months in the intervention arm [36].

Other studies incorporating Motivational Interviewing have reported positive results in improving eating behaviours (e.g. Healthy Choices [37]) and obesity status (Motivational Interviewing with CBT [38]). School-based obesity prevention programmes incorporating Motivational Interviewing have also shown promise: for example, New Moves, a pilot school based activity programme for adolescents, which used Motivational Interviewing to engage 20 inactive 16–18-year old girls, achieved high levels of participation and had a positive impact on activity, eating patterns and self-image [39–41]. However, Motivational Interviewing had no additive effect on weight related outcomes when added to circuit training sessions for 38 Latino adolescents [42].

A relatively small number of studies have been published on Motivational Interviewing for paediatric obesity with mixed results. More research is needed to understand what role Motivational Interviewing can play in the management of paediatric obesity. Several protocols designed to look at how Motivational Interviewing can influence behaviour change in paediatric obesity have recently been published [43–48]. We await their results in the near future.

## Adult Diabetes (Type 1 and Type 2)

The majority of recently published studies of Motivational Interviewing in adults have been focused on improving metabolic control in T2D.

In a comparison of Motivational Interviewing with Cognitive Behaviour Therapy, HbA1c was significantly lower in the Motivational Interviewing group (n = 93) [49].

Motivational Interviewing appears to be most effective when the interview is tailored to match the individual's level of self efficacy and readiness to change. In a study of 250 patients with T2D individualized Motivational Interviewing improved self-management, self-efficacy, quality of life and HbA1c with over half of the participants that received Motivational Interviewing moving from contemplation to preparation or action stages compared with only 17% of the usual care group [50]. The intervention was more effective for women and participants who were middle-aged, employed and with higher levels of education. Another study of 66 adults with uncontrolled diabetes who were offered videophone Motivational Interviewing as part of diabetes self-management education showed improved HbA1c, diabetes knowledge and diabetes self-efficacy compared to those who received healthy-lifestyle education calls. Participants in the Motivational Interviewing group that had high self-efficacy had the greatest reductions in HbA1c [51].

These studies confirm the importance of assessing individual differences as potential moderators of tailored health interventions. Tailoring interventions based on values and other motivational constructs can enhance message impact, and extend intervention reach and perceived relevance.

Motivational Interviewing in ethnicity-specific groups has also been explored. Two individual, 30-min sessions of Motivational Interviewing delivered over 3 weeks with residents of an American Indian reservation with T2D found predictors of change in HbA1c included change in provider trust, treatment acceptance, depression and reported hours of exercise per week [52].

In contrast, one study showed a greater improvement in HbA1c in the non-Motivational Interviewing groups than in the groups receiving Motivational Interviewing [53]. Another study failed to show any benefit of Motivational Interviewing over and above usual care for either T1D or T2D [54].

One research group has focused on the use of motivation enhancement therapy (MET) in adults with T1D. MET is a Motivational Interviewing-based approach specifically designed to increase motivation to engage with treatment. Ismail et al. found that nurse-delivered MET and CBT resulted in modest 12-month improvements in HbA1c levels compared with usual care for patients with T1D, but MET alone did not. Both interventions had low probabilities of cost-effectiveness based on Quality Adjusted Life Years but were high based on HbA1c improvements [55–57], A follow up study showed no evidence of benefit for patients randomized to the MET plus CBT group at 2, 3 or 4 years [58].

In the nine studies reported here the majority of them have shown improved metabolic control in adults with T2D. The different outcomes in studies suggests that Motivational Interviewing is most effective when interventions are tailored to individual need and are based on values and other motivational constructs in order to enhance message impact and extend intervention reach and perceived relevance. The use of Motivational Interviewing in adults with T1D was only able to show short-term improvements.

## Paediatric Diabetes

Most controlled trials that have specifically addressed T1D were related to the adolescent age group [59]. In a 2008 review of

Motivational Interviewing and paediatric health behaviour interventions [10], seven of nine RCTs in health-related domains including diabetes, obesity, reproductive health and dental problems reported positive findings on the effectiveness of Motivational Interviewing compared to the control groups. These showed that it is feasible to use Motivational Interviewing with teenagers and parents of younger children in a health-related arena and that Motivational Interviewing can also be combined with other approaches and interventions such as dietary advice or Cognitive Behaviour Therapy. The Suarez review reports three trials all within this age-group: Participants experienced improved perceptions of their diabetes [60]; a reduction in HbA1c [61] and quality of life changes and significant reductions in HbA1c maintained a year after the end of the intervention [62,63].

There has been an increasing focus on incorporating Motivational Interviewing principles into other formats, for example, a 'personal trainer' model developed by Nansel using a non-clinical practitioner to deliver a six session intervention with 81 teenagers [64]. This has shown promising results in relation to lowering HbA1c particularly with older teenagers. In the UK, another response to the scarcity of mental health resources available to deliver Motivational Interviewing interventions has been to shift the focus away from individualized support outside clinic time, towards weaving the ideas into the routine consultations with regular practitioners, taking a population rather than an individual approach (DEPICTED) [65]. However, results from this study indicate that this may not be the best way forward with insignificant results on HbA1c and psychosocial measures at the end of the intervention [66].

There are a relatively small numbers of studies of Motivational Interviewing in paediatric settings. The majority of studies focus on the adolescent age group with a paucity of research into the use of Motivational Interviewing with parents and/or younger children living with diabetes. Whilst the results are tentatively positive the number of new studies being published has stalled in recent years.

## What is the Future for Motivational Interviewing?

As with any relatively new approach Motivational Interviewing has gone through a developmental process. Early trials supported the use of Motivational Interviewing in managing weight and weight-related issues as well as T2D in adults and T1D in adolescents, either as a stand-alone treatment or as an adjunct to other treatments. Motivational Interviewing is often used as a method of engaging patients in the programmes thus enabling the programmes to be more effective. This initial success lead to a burgeoning of studies with the intervention delivered by a range of practitioners with varying attention to the issue of treatment fidelity. The success of Motivational Interviewing has been tempered by some negative results, particularly in the adult health arena. There has also been a significant drop in the number of published studies in the paediatric context, leaving the field reliant on only a handful of studies. There are key process issues that need to be resolved before it is clear how effective Motivational Interviewing can be in relation to different presenting issues and when compared to other approaches. These include treatment fidelity, the qualification of the individual delivering the intervention, how many sessions are offered and the mode of delivery. The next section looks at each of these issues and how they can impact on study outcomes.

## Treatment Fidelity

There has only been limited work within studies ensuring treatment fidelity, which is a complex process with a non-manualized, very individual approach. Measures to address this [67] will need to be incorporated if the evidence base is to move forward. Motivational Interviewing is a deceptively simple approach; whilst some of the concepts are straightforward to grasp intellectually, the skilful practice of Motivational Interviewing takes time, effort and responsiveness to regular feedback. It is a popular intervention, with a lot of introductory courses available and as such measurement of treatment fidelity is particularly important to ensure that what is being delivered is actually Motivational Interviewing adherent. For example, in a pilot study general practitioners (GPs) were trained to offer short-term Motivational Interviewing for T2D patients with positive impact on understanding and motivation for change [68,69]. In the follow-up RCT, metabolic status improved independent of GP training status but examination of fidelity showed that the GPs used less than two out of three planned Motivational Interviewing consultations [70]. Moore et al. [71] also found limited improvement in practice in exercise professionals and identified the need for further training.

## Does Who or How It is Delivered Matter?

Several studies have explored level of qualification and training as a factor in study outcomes Trained undergraduate students successfully delivered an Motivational Interviewing intervention to obese female cardiac patients achieving significant reductions in weight [72]. Individual behavioural counselling using Motivational Interviewing techniques delivered by counsellors recruited from the local community achieved more weight loss than a group that were given information leaflets [73]. Dietician and physiotherapists trained in Motivational Interviewing offered individual advice to a group of patients with impaired glucose tolerance which resulted in lowering of the cumulative incidence of T2D by 55% [74].

Britt [75] also showed that dieticians trained in Motivational Interviewing were significantly more empathetic, showed more reflection during consultations and listened more than dieticians who had not been Motivational Interviewing trained. Patients seeing the Motivational Interviewing dieticians had significantly lower saturated fat intake levels although no effects on HbA1c, BMI and waist circumference were found. Nurses' can be successfully trained to provide satisfactory fidelity to Motivational Interviewing and have seen Motivational Interviewing as consistent with their values and better than traditional advice-giving approaches [76]. Motivational interviewing has also been shown to be effective in a pharmacy setting [77].

*Quantity.* The 'dose' of Motivational Interviewing may also play a part in outcomes [15]. There is a significant variation in how much Motivational Interviewing is actually

delivered ranging from brief one-off consultations to longer term individual sessions. For example using Motivational Interviewing to increase physical activity. Hardcastle [20] showed people who attended two or more consultations (out of a possible four) increased their total physical activity, stage of change and family social support more than those who attended just one.

*Mode of Delivery.* There are also been a range of modes of delivery ranging from 'Motivational Interviewing based' leaflets [73] to individual face-to-face consultations. Motivational telephone calls were not superior to letters at increasing physical activity and intake of fruit and vegetables over a 2-year period in a large study of 1629 participants although telephone calls were more positively evaluated than the letters [78]. Telephone calls with Motivational Interviewing for physically inactive adults in rural communities increased self-efficacy for exercise but did not increase physical activity levels [79].

## Conclusions

Recent work on adherence in paediatric diabetes and obesity suggest that multi-component interventions targeting emotional, social or family processes have a greater impact than interventions that just target a direct behavioural process [80]. The majority of published studies looking to find ways to address weight and diabetes control suggest that Motivational Interviewing has the potential to facilitate change and improve the efficacy of and engagement alongside other interventions, however, there are still many areas of uncertainty. A wide range of professionals can deliver motivational interviewing effectively, however, studies often fail to measure and report on fidelity of delivery so there is lack of clarity as to what aspects of Motivational Interviewing are being delivered. Studies also describe the approach as effective delivered in written formats or over the telephone.

However, interventions reported in both adult and paediatric contexts seem to have more effective outcomes when more sessions are delivered using an individualized approach.

As Motivational Interviewing research moves into its next phase, it is essential that studies carefully address the process and fidelity issues as a precondition for seriously evaluating outcomes of Motivational Interviewing interventions in order to create a clearer picture of its role in facilitating change in health behaviour.

## Conflict of Interest

Both authors contributed equally to the data collection, analysis and writing of the manuscript.

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