



REVIEW ARTICLE

Behaviour Modification in Weight Management: The Transtheoretical Mode of Change and the Motivational Interviewing

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Abstract

Addressing obesity is now a crucial public health challenge due to its sharply rising prevalence and despite the considerable effort directed at this, success is not yet fully achieved. Evidence has shown that effectively changing human behaviour and lifestyle is a corporate approach for weight management with recognised worthy success in achieving weight loss and maintenance. Behavioural change techniques are now chief contributory factors to any weight management program.

The rapidly growing understanding of human behaviour modification techniques and theories as an important tool to tackle the intricate multifaceted behavioural change required to address complex issues like obesity and weight management is encouraging. Accumulating evidence has shown that the use of stage based tailored behaviour modification theories and techniques can yield positive results if adequately implemented. However, due to the variability in application, results can be indefinite and sometimes confusing. This highlights the need for a consistent standardized method of application and reporting.

This short review offers a synopsis of advances in the utilisation of Behavioural modification theories and techniques in weight management focusing on the Transtheoretical theory and Motivational interviewing technique.

Keywords

Obesity, Weight management, Behaviour change, Behaviour modification, Transtheoretical mode, Motivational interviewing, Psychological aspects

Introduction

The Obesity epidemic with its fast-expanding global prevalence has become a major challenge [1]. Addressing obesity is now a crucial public health concern and despite the considerable effort directed at this, success is not yet fully achieved. Evidence has shown that effectively changing human behaviour and lifestyle is a corporate approach for weight management with recognised worthy success in achieving weight loss and maintenance [2]. Behavioural change techniques are now chief contributory factors to any weight management program. The National Institute for Health and Care Excellence (NICE) in the UK recommends delivering behavioural intervention with the support of an appropriately trained professional for any effective intervention addressing obesity [3].

Behavioural change-based weight management strategies require the application of effective theoretical evidence-based methods [2]. There are many behavioural change theories. Individually, each theory concentrates on different aspects to try and describe behaviour change. Out of the numerous theories and models, the most predominant are the transtheoretical model of change, motivational interviewing, the theory of planned behaviour, the social cognitive theory, self-efficacy and the health belief model.

This short review offers a synopsis of advances in the utilisation of Behavioural modification theories

and techniques in weight management focusing on the Transtheoretical theory and Motivational interviewing technique.

The Transtheoretical Model of Change

The transtheoretical theory (TTM) is one of the most frequently used approaches in behavioural modification. It was developed by Prochaska and Diclemente in the early 1980s [4]. According to the theory, modifying human behaviour is a process involving different stages of change (SOC) and targeted individuals can be at any of these stages at any point in time. Five stages of change were identified: Precontemplation, contemplation, preparation, action, and maintenance. Individuals can move forward through the cycle but can also step back to a previous level until achieving behavioural consistency. The creators of the theory stated that the development of their model was related to the need for comprehensible construction of the process of behaviour change. The model was based on investigational data acquired through surveys completed by heavy smokers.

Prochaska, et al. examined the application and generality of the transtheoretical model across 12 different problematic behaviours [5]. The cross-sectional evaluations reviewed the relationship between two principal bodies of the model, the stages of change and decisional balance. They recognised common factors across the 12 behavioural patterns, and this led them to identify three main elements governing the progress from one stage of change to the next.

These include the following: Process of change (PC), decisional balance (DB) defined as examining the pros and cons of the old and new behaviours which are the basis of decision-making, and self-efficacy (SE) defined as the self-perception of the possibility of behavioural change.

The stages of change portray individual's readiness to change and provide a time element for the change course.

McConaughy, et al. linked the application of interventional psychotherapy to the individual's stage of change [6]. According to them, the stages of change include:

- **Precontemplation:** Lack of intention or plan to change the behaviour. The person might not consider the behaviour a problem or try to resist any need for change. At this level, the principal job is to raise individual's awareness of the presence of the problem and motivate them to think about the need for change.
- **Contemplation:** The individual is considering change, albeit without a pledge to action. The task at this level is to concentrate on encouraging the individual to act on the decision, as well as consolidating self-efficacy.

- **Preparation:** Pledge to action. Here, the job is to reinforce the commitment and to help creating an individualised action plan.

- **Action:** The person becomes engaged and implements the new behaviour. At this stage, the task is, confirming and reiterating the commitment to the change.

- **Maintenance:** Enduring and maintaining the new behaviour. The main goal at this level is to avoid relapses and strengthen the achievements made at the previous level.

- **Relapse:** Primarily, the authors of the TTM distinct relapse as a stage. However, after extra analyses, relapse is now considered as a recession in the stages of behaviour change. The task at this stage is to emphasise on a return to the previous plan and on the reinforcement of self-efficacy.

TTM has been widely used to encourage change in human behaviour and applied in the prevention and treatment strategies for different chronic diseases including obesity and weight management incorporating the extended use of five stages of change [5-7].

In 2010, TTM was applied to analyse exercise behaviour in Korean adults with metabolic syndrome in a descriptive cross-sectional study [7]. More than 200 Koreans with metabolic syndrome participated in the study. They reported that TTM elements of decisional balance, self-evaluation and self-efficiency were directly associated with positive outcome on adherence to regular exercise behaviour and therefore TTM can be used to create new strategies to promote regular exercise behaviour in the population.

Genberg, et al. examined the relationship between the stages of behaviour change and compliance with anti-retroviral medications among HIV patients [8]. Among 137 randomly selected participants, they found out that participants at earlier stages of change had considerably lower compliance with the medications (around 10%) in comparison with those at advanced stages of change. This demonstrates that TTM can be used by professionals to assess and identify patients at-risk of non-compliance.

More recently an experimental study from 2015 examined the effect of an intervention based on TTM to promote increased physical activity, tackle weight problems and improve metabolic syndrome markers in women [9]. Around 140 women with metabolic syndrome were randomly allocated to the case and control group. Processes of change, decisional balance and self-efficacy questionnaires and International Physical Activities Standard Questionnaire were filled in prior to the study then in 3 and 6 months after the intervention. Abdominal circumference and lipids profile were also recorded. Physical activity education based on (TTM)

was implemented in the case group. They reported increased physical activity in that group with forward progression in the stages of change while individuals in the control group had actually reverted. Abdominal circumference and Triglycerides have drastically reduced in the case group in contrast to the control group.

Conversely, a few studies had led to undesirable outcome utilising TTM. Salmela, et al. reported negative results in their systemic review of the studies that applied TTM in dietary intervention for diabetic patients [10]. Their findings suggested that the current data are inadequate to support the use of transtheoretical model.

A systemic literature review on the use of TTM in substance abuse from 2009 argued that criticsers of the model tend to consider TTM very random in not clearly defining the borderlines between the different stages and the tasks ascribed to each of them [11]. The TTM prophesies how the process of behavioural change should ideally take place rather than purely describing it. Most of the studies in the literature related to TTM are, however, cross-sectional, suggesting a descriptive approach. Hence, it is hard to fully assess the long-term efficiency of the TTM merely based on these studies.

Concerns about TTM were raised as early as 1992 by Davidson who argued that it is not clear what proportion of people progress in an “orderly” way through the stages of change and that it is resistant to measurement and hence might be difficult to reproduce [12].

Despite of some of the criticism drawn at the TTM, the model remains a key reference of how behavioural change occurs. It can facilitate planning treatment intervention taking into consideration the possibility of matching interventions to stages. In a short commentary, Brug acknowledges [13] The difficulties encountered when trying to utilise TTM to promote complex health behaviour. Given the complexity of the aetiology of obesity, intricate multifaceted sets of behaviour are usually required to change rather than a single behaviour. When addressing such behavioural change, Individual’s might hold different self-efficacy beliefs and decision balancing principles. However, stage-targeted interventions are yet more likely to encourage motivation and stimulate early behavioural change [13].

Motivational Interviewing

The technique of motivational interviewing (MI) developed from different trials in planning treatment strategies for alcoholism and was first described by Miller in 1983 [14]. It is defined as “an individual-focused counselling approach for prompting behaviour change by helping individuals to survey and resolve uncertainty”. The four key factors are: (a) Conveying empathy, (b) Clarifying inconsistency, (c) Rolling with resistance, (d) Supporting self-efficacy. They have further been explained in 2002 by Miller and Rollnick [15].

MI states that an individual will more likely change their behaviour in response to motivation than information [16]. It should be non-confrontational and aiming at promoting change in behaviour through evaluating and resolving an individual’s uncertainty and resistance and boosting the individual’s self-confidence level [17].

In this technique, Motivation is not considered a personality trait but an interpersonal process that may vary over time depending on the setting. Motivational interviewing is utilised as a psychological method aiming to increase the possibility that an individual will try and change their undesired behaviour. It provides an applicable low intensity intervention in promoting health-related outcomes such as weight loss [18].

Some of the techniques that are used by MI experts include the abbreviation FRAMES: Feedback, Responsibility for change, Advice provision, Menu of options, Empathy, and Self-efficacy improvement [19]. Advice, however, is only provided with the permission of the individual who is encouraged to make informed and correct decisions based on the advice.

It is vital from the start that the individual does most of the talking and the care provider should do most of the listening. This helps the care provider to establish the individual’s degree of readiness to change. MI is proven to be a successful management intervention in comparison to other interventions and more efficient than placebo [20]. MI also increases the individuals’ commitment to their treatment. Both genders benefit equally from the intervention. However, using MI on patients with cognitive impairment or lack of insight might not be appropriate.

Adaptations of MI have extended from short 30 minutes face to face interventions (Motivational Consulting) to Motivation Enhancement Therapy (MET), a prolonged treatment intervention, including a long assessment, individualised review and follow-up sessions [21]. MI has been pertained both as a stand-alone intervention and in combination with other strategies in different situations. These include health settings such as in-patient hospital wards, emergency rooms, and outpatient general practice consultations [19].

Carvajal, et al. [22] carried out a review examining randomised controlled trials of the management of obesity in primary care. They reported that health services that utilised behavioural counselling for obesity have yielded upbeat results in the reduction of obesity, type 2 diabetes and cardiovascular disease.

In 2015, Simpson, et al. [23] designed a study initially as a randomised controlled trial to deliver a 12 months intervention for weight loss maintenance based on MI.

Recruits received individually customised MI, which included projection and self-monitoring, the intensity of which varied according to the study groups. They found out that the intensive intervention led to a statistical-

ly significant difference in weight (approximately 4 kg). However, due to recruitment issues, the study became a feasibility trial. Furthermore, the small sample size added on to the limitation of the study.

MI is increasingly being used by health care providers dealing with childhood Obesity. Gourlan, et al. [24] described the usefulness of providing a MI based intervention together with a standard weight loss program as a further utility in reducing weight in obese adolescents.

It is crucial that parents of obese juveniles are engaging with the MI technique in order to have the obese children fully motivated to lose weight, and that the intervention is personalised to reflect the requirements of the adolescent, as a generalised approach is unlikely to generate successful outcomes [24,25]. A study by Bean, et al. [25] examined the commitment of parents to MI. They reported that the demographics of the parents and the level of contentment the parents had with using MI can influence how committed the adolescent are to the program. Therefore, it is imperative that specific interventions are tailored for specific populations as cultural differences must also be taken into consideration to achieve the desired outcome.

Critics of the motivational interviewing theory pointed out that learning to effectively adopt the theory can be difficult. Practitioners are generally provided with a short training which might not be enough to master the skill [26].

They also highlighted that in order for it to be successful, rapport needs to be built between the patient and the therapist. Time limitation and short consultations can adversely affect the quality of MI [27]. In addition, utilising MI to treat patients with a background of mental health disorder such as depression or schizophrenia might not be successful as these patients usually need their core issue of mental health disorder addressed rather than trying to motivate them to deal with another problem [28].

Individuals in the pre-contemplation SOC are an extra limitation to the model as they do not recognise they have a problem and hence are unlikely to be receptive to motivational interviewing [29].

Nevertheless, MI remains an important model of behavioural change that is widely used by health care professionals, regardless of the amount of training and supervision across various settings in different stages of disease [28].

Conclusion

The rapidly growing understanding of human behaviour modification techniques and theories as an important tool to tackle the intricate multifaceted behavioural change required to address complex issues like obesity and weight management is promising. Ac-

cumulating evidence has shown that the use of stage based tailored behaviour modification theories and techniques can yield positive results if adequately implemented. However, due to the variability in application, results can be indefinite and sometimes confusing. This highlights the need for a consistent standardized method of application and reporting.

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