



10-1-2013

# Prevention of Type 2 Diabetes (T2DM) in South Africa - a Focus on Facilitating Physical Activity Behaviour Change in Peri-Urban Youth

Carmen Anderson

*University of Cape Town, South Africa, carmen.sylvia.anderson@gmail.com*

Anica Jansen van Vuuren

*University of Cape Town, South Africa, anicajvv@gmail.com*

Despina Learmonth

*University of Cape Town, South Africa, despina@drlearmonth.com*

Corresponding author: Despina Learmonth, University of Cape Town, South Africa,  
[despina@drlearmonth.com](mailto:despina@drlearmonth.com)

## Recommended Citation

Anderson, C., Jansen van Vuuren, A., & Learmonth, D. (2013). Prevention of Type 2 Diabetes (T2DM) in South Africa - a Focus on Facilitating Physical Activity Behaviour Change in Peri-Urban Youth. *Online Readings in Psychology and Culture*, 10(1). <https://doi.org/10.9707/2307-0919.1122>

---

# Prevention of Type 2 Diabetes (T2DM) in South Africa - a Focus on Facilitating Physical Activity Behaviour Change in Peri-Urban Youth

## Abstract

This paper focuses on type 2 diabetes mellitus (T2DM), and the significant health implications it has on individuals living in currently disadvantaged peri-urban areas in South Africa. Given the significant public health and socio-economic burden South Africa faces due to scarce resources and escalating rates of chronic diseases, prevention strategies which impact on modifiable risk factors for T2DM are vital. The population of interest was children and adolescents living in informal settlements on the outskirts of Cape Town. The suggested behaviour change was the increase and maintenance of a more physically active and healthy lifestyle, thereby facilitating weight loss and lowering the risk for developing T2DM. Brief motivational interviewing (BMI) based interventions, aimed at encouraging children and adolescents to modify their behaviour patterns are introduced. Transformative communication, self-efficacy and social support are also emphasised as crucial factors contributing to the promotion and maintenance of the desired health behaviour changes.

### Creative Commons License



This work is licensed under a [Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License](https://creativecommons.org/licenses/by-nc-nd/3.0/).

## **Introduction**

Diabetes mellitus prevalence in South Africa is epidemic with marginalised communities being at high risk of developing T2DM and other chronic diseases of lifestyle (CDL) (International Diabetes Federation, 2009). Despite misconceptions that T2DM is only problematic for the adult population, research shows a rapid increase in the development of obesity-associated T2DM in the youth of sub-Saharan Africa (Lee, 2007).

It is clear that local behaviour practices and beliefs, as well as several community specific external and internal barriers to change contribute to this ever-increasing T2DM prevalence, by promoting non-participation in physical activity (Goldsmith, 2003; Mchunu & le Roux, 2010). An operational, cross-cultural, and cost effective intervention is required to promote behaviour change in these populations (Mayosi et al., 2009).

This article discusses the sedentary lifestyle and rising prevalence of obesity among children and adolescents in South Africa's impoverished peri-urban settlements. It further explores community-specific barriers to physical activity. The remainder of the paper highlights the basic principles underlying Brief Motivational Interviewing (BMI), an empowering technique borrowed from health psychology. It is argued that BMI addresses these community-specific barriers. By encouraging behaviour change at a young age, it is proposed that BMI will instil positive behaviour habits in the youth that will continue into adulthood, reducing the risk of developing CDL such as T2DM (Weissberg, Kumpfer, & Seligman, 2003).

## **The Emerging Epidemic of Diabetes in South Africa**

The diagnosis of diabetes mellitus is part of an emerging epidemic of non-communicable diseases in sub-Saharan African countries. The growing prevalence of diabetes makes it a significant catalyst to morbidity, premature mortality, and increasing health care costs (Mayosi et al., 2009). A 2009 report by the International Diabetes Federation suggests that worldwide rates of diabetes will escalate by 54% from 2010 to 2030 (284.6 to 438.4 million). For sub-Saharan Africa, this growth is estimated at 98% (12.1 to 23.9 million) (International Diabetes Federation, 2009). Notably, glucose intolerance in sub-Saharan countries is also predicted to rise by 75.8% in the same time frame (26.9 to 47.3 million). This is twofold the amount of the projected global increase of 37% (International Diabetes Federation, 2009). Retrospectively, research has shown that the overall diabetes-induced deaths in sub-Saharan Africa significantly increased from 2.2% (in 2000) to 6% (in 2010). These rates were highest between the ages of 20 to 39 years, the most economically productive members of peri-urban populations (International Diabetes Federation, 2009).

The current prevalence of T2DM and metabolic syndrome (also known as insulin resistance syndrome; a risk factor for developing T2DM) in the youth population of South Africa is unknown (Mayosi et al., 2009). Many children and adolescents remain undiagnosed due to a lack of health education and services; as well as due to a poor consensus of the diagnostic criteria of metabolic syndrome in children (Gupta, Goel, Shah, & Misra, 2012; Mayosi et al., 2009). Research has predominantly focused on childhood obesity prevalence in Africa. As a primary risk factor for the development of T2DM, this

data is highly relevant to investigating the T2DM epidemic. In 2010, it was estimated that, globally, 43 million children (<5 years) were overweight, with around 35 million of these children living in developing countries (Rossouw, Grant, & Viljoen, 2012). Africa has the fastest growth rates of overweight and childhood obesity, with the number of overweight and obese children more than doubling since 1990 (Rossouw et al., 2012).

The youth of sub-Saharan Africa is particularly vulnerable to T2DM due to a lifetime accumulation of risk factors, e.g. early weight gain (0-5yrs), childhood obesity, malnutrition, sedentary lifestyle (Dalal et al, 2011). While childhood diabetes mellitus cases were typically of the type 1 kind, in recent years there has been a rapid increase in the development of obesity-associated T2DM (Lee, 2007). Since, undiagnosed insulin resistance syndromes may be present in South African children and adolescents, risk factors such as obesity, further increases their risk of developing comorbid CDL, such as T2DM, in later life (Rossouw et al., 2012).

The impending severity of diabetes in South Africa, particularly in peri-urban communities, is such that epidemiologists predict that its economic impact and death toll will exceed the devastation already evidenced by HIV and AIDS (Mayosi et al., 2009). Thus, in addition to the challenges of economic resource depletion, marginalised peri-urban communities face the double burden of communicable diseases (e.g., HIV/AIDS) and non-communicable diseases (e.g., diabetes) (Boutayeb, 2006). As a result, there is an increasing demand placed on health care providers and health care facilities in South Africa to deliver more efficient and effective prevention programmes. Although non-communicable diseases such as diabetes are largely preventable, the epidemic continues due to a lack of widespread public health prevention programmes and accessible educational resources (Mayosi et al., 2009).

### **Risk Factors and the Management of T2DM in South Africa**

South African health services are primarily curative in their approach to non-communicable diseases (Mayosi et al., 2009). As a result, non-communicable diseases such as diabetes are rarely diagnosed and often inadequately treated. If left untreated, patients suffering from T2DM are at greater risk of developing cardiovascular disease, diabetic retinopathy (the leading cause of adult blindness), diabetic neuropathy (resulting in autonomic dysfunction), and potential complications resulting in lower extremity amputation (Kengne, Amoah, & Mbanya, 2005; Mash et al., 2007; Ogbera, Osa, Edo, & Chukwum, 2008, Tuei, Maiyoh, & Ha, 2010). This further increases their risk of CDL (chronic diseases of lifestyle) such as hypertension and cardio-vascular disease. In fact, studies have shown that up to one third of diabetic patients also present with hypertension and obesity (Mollentze, 2012).

Obesity is a fast growing problem world-wide and is recognised as one of the primary causes of T2DM – leading to the use of the word “diabesity” in both urban and rural areas (Bray, 2003; Farag & Gaballa, 2011; James, Rigby, & Leach, 2004). This causal relationship is due to the extensive disruption excessive fat accumulation has on metabolic processes that control blood glucose, blood pressure, and lipids (Misra & Khurana, 2008). Research shows that obesity and subsequent T2DM, mediated by the disproportionate consumption of high energy-content foods and low levels of physical

exertion, are strongly correlated with rapid urbanisation – a common occurrence in the developing world (Rheeder, 2006). In South Africa, more than 29 % of men and 56 % of women are classified as overweight or obese (Puoane, Steyn, & Bradshaw, 2002; Steyn et al., 2001). Similarly, around 7% of South African preschoolers (<5 years) and 34.6 % of children aged 6-13 years are classified as overweight or obese (Gupta et al., 2012). Kimani-Murage et al (2010) estimate that around 10% of adolescents in South Africa, girls in particular, are at risk of developing metabolic disease.

As a result of the rapid expansion and growth of small towns and peri-urban areas in South Africa, there is a consequent increase in the prevalence of T2DM (Levitt, 1996). Researchers argue that a major contributing factor to the T2DM epidemic in South Africa is the distinct nutritional transition, that has pushed individuals away from a healthy traditional high-fibre, low-fat, low-calorie diet, towards the excessive consumption of refined carbohydrates, low fibre foods, fats and red meats (Misra, Singhal, & Khurana, 2010; van Rooijen, Rheeder, Eales, & Becker, 2004).

It is clear that the T2DM epidemic is therefore not only a result of urbanisation, but is also a consequence of associated factors such as dietary changes, increased inactivity, aging populations, and insufficient prevention and management interventions (Osei, Schuster, Amoah, & Owusu, 2003; Wild, Roglic, Green, Sicree, & King, 2004). These issues are further compounded by social obstacles such as poverty, marginalisation, poor education, illiteracy, and a lack of access to health care (Azevedo & Alla, 2008). The young black peri-urban population of South Africa, in which the prevalence of T2DM has particularly increased, are even more vulnerable to these social obstacles, which may contribute to the risk factors for T2DM (e.g., low self-esteem, discrimination, and social rejection which may cause an aggravation of the weight problem) (Mollentze & Levitt, 2005; Rossouw et al., 2012). Although South Africa has policies and guidelines in place for the treatment and management of diabetes, it is increasingly evident that the implementation of these strategies alone is insufficient to improve the delivery of care (Daniels et al., 2000).

Diabetes is a multi-faceted disease with numerous risk-factors. Yet, there is potential benefit in addressing the problem from a preventative grassroots approach at community level. Since being overweight and obesity is a primary risk factor for T2DM in children and adolescents, prevention strategies aimed at facilitating health behaviour changes may offer a valuable addition to the treatment and management of T2DM in South Africa.

### **T2DM-Related Health Behaviour Changes**

The onset and exacerbation of T2DM is affected by factors that have strong behavioural components (Searight, 1999). Subsequently, the adoption of a healthier diet as an intervention has been covered extensively in diabetes literature: the development of T2DM can be prevented and delayed in patients with high risk of T2DM through the implementation of diet-related behavioural interventions (Knowler et al., 2002; Ramachandran et al., 2006). A recent meta-analysis by Yamaoka and Tango (2005) confirms that lifestyle-interventions can produce up to a 50% relative risk reduction in the

incidence of T2DM. However, there has been little focus on proactive strategies aimed at increasing physical activity for the prevention of T2DM.

The rates of obesity in South African adolescents are rising: 15% of adolescents from 13 to 19 years of age are overweight or obese (Mayosi et al., 2009; Puoane, Bradley & Hughes, 2005; Reddy et al., 2008). This observed growth reflects a worldwide trend in escalating levels of obesity in various populations (Lambert & Kolbe-Alexander, 2005; Mayosi et al., 2009; Mollentze, 2012; Twei et al., 2010). A survey study conducted by Amosun, Reddy, Kambaran, and Omardien (2007) revealed that over a third of South African children are inactive. This sedentary lifestyle is often attributed to rapid urbanization and economic changes that normalises inactivity and promotes a poor diet that is perpetuated by the increased availability of cheap “fast-food” that is high in fat, sugar, and salt (Mayosi et al., 2009; Twei et al., 2010).

Several studies show that an increase in physical activity, through recreation (e.g. play or sporting activities) or daily activities (e.g. walking to school), has numerous physiological benefits, including glucose control, weight-loss, and reduced cardiovascular disease risk (Goldhaber-Fiebert J., Goldhaber-Fiebert S, Tristan, & Nathan, 2003). Increased physical activity can therefore aid in the prevention and development of T2DM (Goldhaber-Fiebert et al., 2003; Keyserling et al., 2002; Loreto et al., 2003; Molleutze, & Levitt, 2005). In addition to the physiological benefits, engaging in sporting activities can enrich the emotional development of children, increase their self-worth and self-efficacy, and teach self-discipline, good judgement, and compassion (Coakley & Dunning, 2000).

Tremblay et al. (2011) recommend that children (5-11 years of age) and youth (12-17 years of age) engage in at least 60 min of moderate-to-vigorous physical activity daily. Their guidelines include vigorous intensity activities for children and youth at least 3 days per week, as well as activities that strengthen muscle and bone 3 times per week (Tremblay et al., 2011). These activities must be in addition to daily physical activities – for example; 60 min of play, sports, games, and other recreational activities (Tremblay et al., 2011). Children and youth who are sedentary may start increasing their amount of physical activity gradually until the guideline is reached (Tremblay et al., 2011).

There is limited data on successful physical activity interventions aimed at preventing and reducing the prevalence of diabetes and other CDLs in marginalised South African communities (Draper et al., 2010). There exists, however, a great need to encourage fitness and re-introduce sports to rural- and peri-urban-based children and adolescents in South Africa, where the importance of such activities is typically overlooked (Lambert & Kolbe-Alexander, 2005). Steyn, Fourie and Temple (2006) argue that this should be done through the implementation of structured extra-mural sports programmes at all schools, thereby encouraging active lifestyles in the population as well as challenging intrinsic negative attitudes about being active (Steyn et al., 2006).

This type of large-scale intervention would require a collaborative effort between national and local governments, sporting organisations, faith-based organisations, schools, the youth sector, and the private sector (Koplan, Liverman, & Kraak, 2005). Further research points to the importance of a supportive school environment, the effective training of teachers, as well as programme alignment with existing curricula (Amosun et al., 2007; Boyle, Jones, & Walters, 2008; Morgan & Hansen, 2008). However, behaviour change can

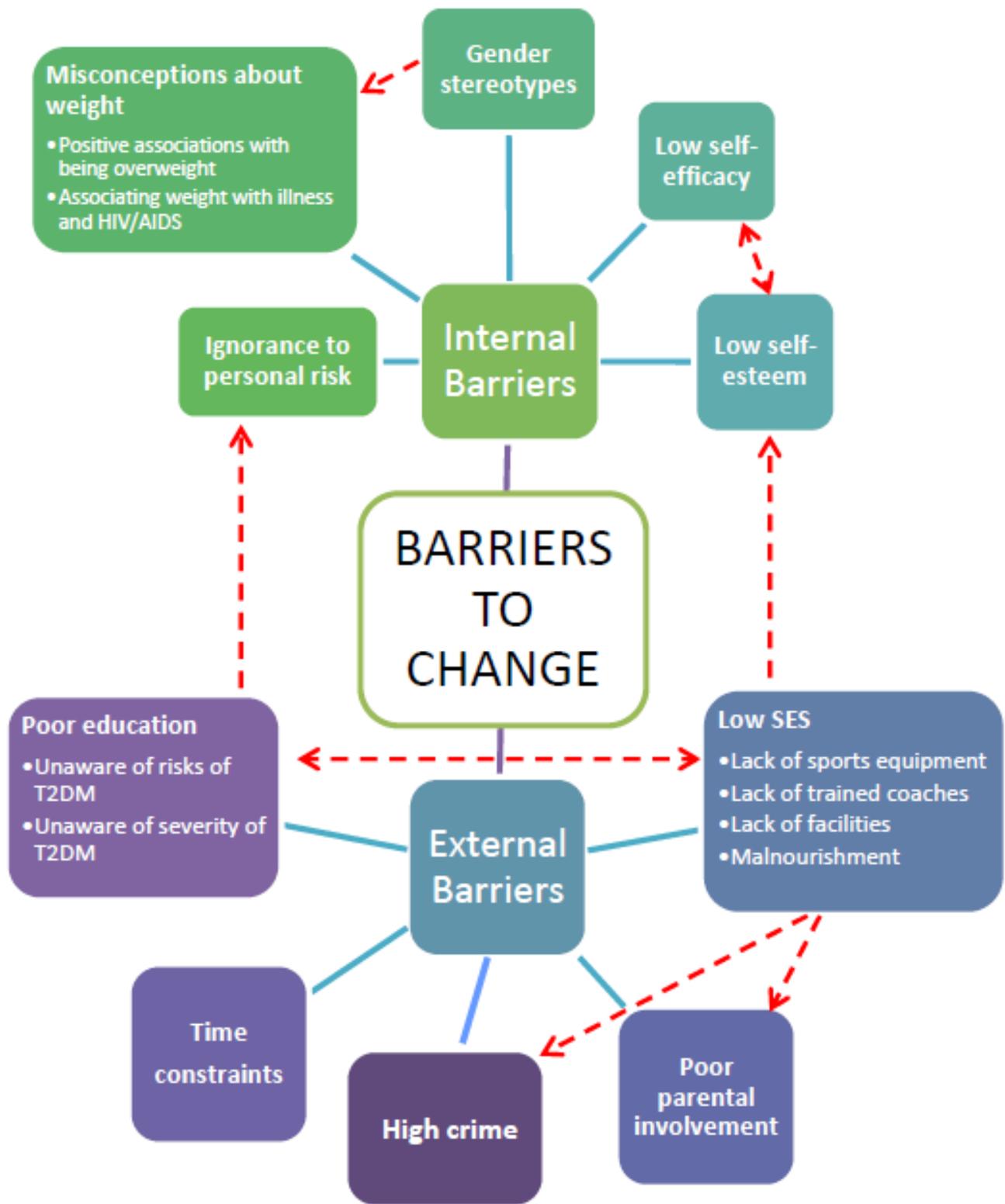
be complex as a multitude of political, social, individual- and community-based barriers to change can sabotage the adoption of, or adherence to, new health behaviours (Steyn et al., 2006).

### **Psycho-Socio-Cultural Barriers to Physical Activity Behaviour Change in Marginalised Communities in South Africa.**

Many factors have been established as contributing determinants of unhealthy lifestyles within marginalised communities in South Africa (see Figure 1). Barriers to increasing physical activity largely pertain to external factors such as poverty and environmental features (Goldsmith, 2003; Mchunu & le Roux, 2010). The majority of schools in rural and peri-urban areas lack sufficient equipment (for example, uniforms and soccer balls/netballs) and trained coaches for compulsory or extramural sports activities (Mchunu & le Roux, 2010). In addition to this, high crime, lack of security, time constraints, the inability to afford exercise equipment, and lack of green areas and recreational facilities hinder individuals' ability to participate in physical activities (Puoane, Zulu, Tsolekile, Bradley, & Hughes, 2007). Some literature suggests that higher rates of malnourishment, as a result of poverty, may be a further barrier preventing adolescents from engaging in regular physical activity (Mchunu & le Roux, 2010). The majority of the population is also unaware of the link between obesity and diabetes, and so obese individuals do not consider themselves to be at risk of T2DM (Puoane et al., 2007).

Mchunu and le Roux (2010) argue that a lack of confidence and low levels of self-efficacy among black youth, perpetuated by the political environment, low socioeconomic status, and conditions of poverty, further prevent them from participating in sports. Degree of parental support is significantly associated with adolescent sport enjoyment as well as sport withdrawal (Singer, Hausenblas, & Janelle, 2001). However, impoverished peri-urban communities in South Africa are typically characterised by poor parental involvement and few adult mentors and role models to promote the benefits of physical activity. This lack of social support and role modelling for children and adolescents in many South African communities hinders participation in physical activity (Mchunu & le Roux, 2010).

Gender stereotypes around sports participation in low socioeconomic environments can also act as a barrier to behaviour change (Mchunu & le Roux, 2010; see Figure 1). While sporting prowess is valued amongst young black males, and subsequent achievement in sporting activities is associated with higher status and respect amongst their peers, non-participation or poor performance in sports may call their masculinity into question. Young men with limited resources, low self-esteem, and low sporting aptitude may be disinclined to attempt sports for fear of ridicule (Mchunu & le Roux, 2010). In young women, participation in sports may be seen to challenge their assigned female roles. As a result, participation in sports can be considered undesirable and non-participation is common amongst young women (Gleeson, 2008; Mchunu & le Roux, 2010).



**Figure 1:** Culture-specific barriers to behaviour change regarding physical activity.

Furthermore, many South African-based cultures typically idealise larger, more voluptuous body types in women (Puoane et al., 2005). Members of the community regard overweight women as attractive, as being overweight is associated with dignity, respect, confidence, and high self-esteem (Fourie & Shapiro, 2005; Puoane et al., 2005). Research shows that this perception is heavily influenced by misconceptions concerning obesity as a health risk (Mvo, Dick, & Steyn, 1990; Ndlovo & Roos, 1999). Further social and cultural beliefs include the notion that increased body mass is a token of well-being, happiness, financial status, and a reflection of a man's ability to care for his family (Van der Merwe & Pepper, 2006). Despite experiencing negative aspects of obesity, such as continuous body aches and tiredness, this intrinsic belief interferes with the maintenance of normal body weight in members of the identified population group (Puoane et al., 2005). Conversely, being thin is often associated with poverty or highly-stigmatised diseases such as HIV/AIDS or cancer (Puoane et al., 2005).

Puoane, Tsolekile and Steyn (2010) found that black South African girls (10-18 years old) living in Cape Town held similar beliefs about obesity and thinness, with the former body type perceived as desirable and the latter as an indicator of illness. This is reflected in the higher prevalence of overweight or obesity found in girls than boys in the country (Rossouw et al., 2012). There is very limited research on the perceptions of black South African adolescents concerning the ideal male physique.

Although these external and internal barriers to behaviour change are concerning, the use of a technique such as brief motivational interviewing (BMI) coupled with community support may effectively instil behaviour change within the community and thereby contribute towards alleviating the high prevalence of T2DM in South Africa's marginalised peri-urban areas.

### **Brief Motivational Interviewing for Behaviour Change**

Although education is a crucial component in the process of behaviour change, traditional authoritarian "advice-giving" models and information-based "scare-tactics" have limited effectiveness in causing and maintaining health behaviour change related to diabetes (Bundy, 2004; Welch, Rose, & Ernst, 2006). Not only are individuals weakly motivated by other's suggestions regarding personal lifestyle behaviours, but these tactics are a common source of frustration to patients and clinicians alike (Anderson & Funnell, 2000). For successful behaviour change to occur, it is essential that individuals are motivated, willing, and ready to make the choice to begin and maintain the desired behaviour change.

Bearing the above in mind, Motivational Interviewing (MI) is a coherent, teachable, evidence-based, simple talk therapy based on the principles of person-centred therapy (Miller & Rollnick, 1991; Resnicow, Dilorio et al., 2002). MI is frequently applied to the management of health behaviours that lead to chronic health conditions such as diabetes, hypertension, and high cholesterol (Emmons, & Rollnick, 2001; Miller & Rollnick, 2002). Evidence suggests that it is effective in increasing treatment adherence and promoting diet- and exercise-related behaviour change in patients with T2DM (Resnicow, Dilorio et al., 2002; West, DiLillo, Bursac, Gore, & Greene, 2007). The primary goal of MI is to elicit motivation (a state of readiness or eagerness to change) from the client (Hettema, Steele

& Miller, 2005). Using an MI style involves tailoring interventions to meet a person's stage of readiness to change (Miller, 1994, Miller & Rollnick, 2002). The counsellor displays empathy towards the client and his or her presenting problems; whilst simultaneously introduces contradictions between the client's goals and their current maladaptive behaviour. This cognitive dissonance creates discomfort and increases the probability of adopting long-term behaviour changes (Welch et al., 2006).

MI also focuses on developing self-efficacy in individuals by helping them realise their own potential, motivation, and enabling an internal locus of control. By appealing to the desires of the client, MI frames the desired behaviour change in a positive light (Bundy, 2004; Resnicow, Dilorio et al., 2002). It further aims to elicit positive statements from patients in order to build self-confidence, self-efficacy, and a belief that self-care can make a difference (Channon et al., 2007).

Although a great deal of the evidence base for MI comes from addiction literature, MI has shown to be highly effective in promoting treatment engagement and adherence for many CDL, such as diabetes (Bundy, 2004; Hettema et al., 2005, Welch et al., 2006). A randomised controlled trial by West, DiLillo, Bursac, Gore, and Greene (2007) found that group diet- and exercise-related MI sessions were highly effective in promoting short and long-term weight loss in adult patients suffering from T2DM. Moreover, a recent prospective study in the United Kingdom, conducted by Hardcastle, Blake, and Hagger (2012), demonstrated the established efficacy of MI for physical activity behaviour change in disadvantaged communities. The results of the study revealed a significant improvement in total physical activity, behavioural attitudes, and friend social support in their sample of  $N = 207$  participants.

BMI is a specific variation of the Motivational Interviewing style, considered with general healthcare settings in mind (Rollnick, Heather & Bell, 1992). It allows for the adoption of an attitude, which is consistent with MI, by non-counsellors working with health issues in varied settings. This attitude can be described as the "spirit of MI", and it focuses on working collaboratively with the client, whilst believing them to be the expert in their own behaviour change process (Colby et al., 1998; Rollnick et al., 1992, Mash & Allen, 2004).

BMI consists of a select set of concrete skills that can be used in single sessions, as little as five minutes in length. The skill set focuses on eliciting what information may be of relevance and interest to the client, providing that information in a neutral way, and then eliciting how a person interprets and follows up on this information (Rollnick et al., 1992; Mash & Allen, 2004). BMI makes it possible for school teachers, sports coaches, and community trainers in NGO-based health and education centres to effectively encourage individual's and group's health behaviour change.

BMI can be a significant tool for behaviour change in disadvantaged children and adolescents, by fostering self-efficacy, improving social support networks, and changing attitudes embedded into the community (Bundy, 2004; Hettema et al., 2005, Resnicow, Dilorio et al., 2002). The principles of BMI can be adapted for use at a community level (Hecht et al., 2005); and have been applied to a multitude of successful activity-related studies in America (Moe et al., 2002; Resnicow, Jackson et al., 2002; Peterson et al., 2002). These studies made use of multidisciplinary workgroups that consisted of experienced MI trainers who ensured that the 'spirit of MI' was preserved in the client-

therapist interaction despite diverse organisational constraints. Important features of these interventions were:

- They maintained a collaborative focus throughout the intervention delivery;
- enhanced rapport with the participants by first identifying their priorities;
- made use of decision balance worksheets and MI counselling that explored areas of discrepancy between the pros and cons of the target behaviours; and
- provided personal feedback to raise client awareness,
- developed perceived discrepancy between existing and desired status, and
- aimed to enhance the participant's motivation to change (Hecht et al., 2005; Moe et al., 2002; Peterson et al., 2002; Resnicow, Dilorio et al., 2002).

Despite the success of this approach, BMI training has yet to be implemented and evaluated in low income schools and community settings in the Western Cape.

### **Further Social and Environmental Change Required for Behaviour Change**

Individuals are more likely to experience self-efficacy around health behaviour change when they have experience of being in control of other aspects of their lives (Strecher, DeVellis, Becker, & Rosenstock, 1986). Unfortunately for many young people living in peri-urban areas in South Africa, feelings of self-efficacy and control are limited (Puljevic & Learmonth, 2013). Behaviour change is closely linked with social change. This means that health promotion and the introduction of new health behaviours cannot simply be about the transfer of factual knowledge and technical skills. It must also involve creating immediate social environments which support the desired change; and broader social environments which facilitate the needs communication capacity of disadvantaged communities whilst promoting reception to this communication (Campbell, Cornish, Gibbs, & Scott, 2010).

With programmes in place, such as the *Siyadlala* programme, which address external behaviour change barriers by providing young disadvantaged children in the Western Cape access to sporting resources, coaching, and exposure to a range of sports in a safe, supportive environment, children are able to act on their newly established motivation for behaviour change (Lambert & Kolbe-Alexander, 2005). As a consequence, such initiatives, with long-term partnership and commitment between government, health services, and academic communities, will be more effective in sustaining and maintaining desired behaviour changes.

### **Conclusions**

T2DM has reached an epidemic state in South Africa with disadvantaged and impoverished communities being at the highest risk of developing T2DM and other CDLs. Local behaviour practices and beliefs contribute to this ever-increasing T2DM prevalence. Of particular concern is the sedentary lifestyle and rising prevalence of obesity among children and adolescents in disadvantaged communities. Studies have shown that physical

activity and sports participation is low in children attending schools in marginalised areas. Additionally, they identified several community specific external (low socio-economic status, lack of resources) and internal (low self-confidence and self-efficacy, beliefs about weight and physical activity) barriers to change promote non-participation in physical activity.

It is evident that the kind of mass-scale health-promoting behaviour change that is needed in South Africa, specifically targeting T2DM and related CDLs, requires changes not only at the individual level but also at a core structural level, taking socio-cultural, political, and economic factors into consideration.

Nevertheless, BMI offers a positive first step as it challenges and changes individual's intrinsic thoughts and belief systems regarding maladaptive behaviour habits and long-term health outcomes, thereby empowering the individual (Channon, Smith, & Gregory, 2003). Although most MI strategies in recent years have been used in adult diabetes services, the methodology is consistent with the developmental stage of adolescence (Channon et al., 2007). It is believed that encouraging the process of behaviour change at a young age will instil positive behaviour habits that will continue into adulthood, reducing the risk of developing CDL such as T2DM (Weissberg et al., 2003).

By eliciting motivation, promoting self-confidence and self-efficacy in young people, as well as building substantial social support networks that reinforce the positive behaviour change, BMI may prove to be a valuable tool in promoting physical activity and preventing non-communicable diseases such as T2DM.

## References

- Amosun, S. L., Reddy, P. S., Kambaran, N., & Ouardien, R. (2007). Are students in public high schools in South Africa physically active? Outcome of the first South African National Youth Risk Behaviour Survey. *Canadian Journal of Public Health, 98*(4), 254-258.
- Anderson, R. M., & Funnel, M. (2000). Facilitating self-care through empowerment. In F. J. Snoek, & T. C. Skinner (Eds.), *Psychology in diabetes care* (pg. 69-97). New York: John Wiley & Sons. <http://dx.doi.org/10.1002/0470846569.ch4>
- Azevedo, M., & Alla, S. (2008). Diabetes in Sub-Saharan Africa: Kenya, Mali, Mozambique, Nigeria, South Africa and Zambia. *International Journal of Diabetes in Developing Countries, 28*, 101-108. <http://dx.doi.org/10.4103/0973-3930.45268>
- Boutayeb, A. (2006). The double burden of communicable and non-communicable diseases in developing countries. *Transactions of the Royal Society of Tropical Medicine and Hygiene, 100*, 191-199. <http://dx.doi.org/10.1016/j.trstmh.2005.07.021>
- Boyle, S. E., Jones, G. L., & Walters, S. J. (2008). Physical activity among adolescents and barriers to delivering physical education in Cornwall and Lancashire, UK: a qualitative study of heads of PE and heads of schools. *BMC Public Health, 8*, 273. <http://dx.doi.org/10.1186/1471-2458-8-273>
- Bray, G. A. (2003). Risks of obesity. *Endocrinology Metabolism Clinics of North America, 32*, 787-804. [http://dx.doi.org/10.1016/S0889-8529\(03\)00067-7](http://dx.doi.org/10.1016/S0889-8529(03)00067-7)

- Bundy, C. (2004). Changing behaviour: using motivational interviewing techniques. *Journal of the Royal Society of Medicine*, 97, 43-47.
- Campbell, C., Cornish, F., Gibbs, A., & Scott, K. (2010). Heeding the push from below: how do social movements persuade the rich to listen to the poor? *Journal of Health Psychology*, 15, 962-971. <http://dx.doi.org/10.1177/1359105310372815>
- Channon, S. J., Smith, V. J., & Gregory, J. W. (2003). A pilot study of motivational interviewing in adolescents with diabetes. *Archives of disease in childhood*, 88(8), 680-683. <http://dx.doi.org/10.1136/adc.88.8.680>
- Channon, S. J., Huws-Thomas, M. V., Rollnick, S., Hood, K., Cannings-John, R. L., Rogers, C., & Gregory, J. W. (2007). A multicenter randomized controlled trial of motivational interviewing in teenagers with diabetes. *Diabetes care*, 30(6), 1390-1395. <http://dx.doi.org/10.2337/dc06-2260>
- Coakley, J., & Dunning, E. (2000). *Handbook of sports studies*. London, UK: Sage.
- Colby, S. M., Monti, P. M., Barnett, N. P., Rohsenow, D. J., Weissman, K., Spirito, A., Woolard, R. H., & Lewander, W. J. (1998). Brief motivational interviewing in a hospital setting for adolescent smoking: a preliminary study. *Journal of Consulting and Clinical Psychology*, 66, 574-578. <http://dx.doi.org/10.1037//0022-006X.66.3.574>
- Dalal, S., Beunza, J. J., Volmink, J., Adebamowo, C., Bajunirwe, F., Njelekela, M., ... Holmes, M. D. (2011). Non-communicable diseases in sub-Saharan Africa: what we know now. *International Journal of Epidemiology*, 40, 885-901. <http://dx.doi.org/10.1093/ije/dyr050>
- Daniels, A. R., Biesma, R., Otten, J., Levitt, N. S., Steyn, K., Martell, R., & Dick, J. (2000). Ambivalence of primary health care professionals towards the South African guidelines for hypertension and diabetes. *South African Medical Journal*, 90, 1206-1211.
- Draper, C. E., de Kock, L., Grimsrud, A. T., Rudolph, M., Nmutandani, S., Kolbe-Alexander, T., & Lambert, E. V. (2010). Evaluation of school-based physical activity intervention in Alexandra Township. *South African Journal SM*, 22, 12-19.
- Emmons, K. M., & Rollnick, S. (2001). Motivational interviewing in health care settings: opportunities and limitations. *American Journal Preventative Medicine*, 20, 68-74. [http://dx.doi.org/10.1016/S0749-3797\(00\)00254-3](http://dx.doi.org/10.1016/S0749-3797(00)00254-3)
- Farag, Y. M., K., & Gaballa, M. R. (2011). Diabesity: an overview of a rising epidemic. *Nephrology Dialysis Transplantation*, 26, 28-35. <http://dx.doi.org/10.1093/ndt/gfq576>
- Fourie, J. M., & Shapiro, M. (2005). "Big is beautiful"- an exploration with urban black community health workers in a South African township. *South African Journal of Clinical Nutrition*, 18(1), 6-15.
- Gleeson, S. L. (2008). *Gender differences in leisure motivation, participation, and constraints for South African adolescents*. Unpublished dissertation, The Pennsylvania State University, Pennsylvania, USA.
- Goldhaber-Fiebert, J. D., Goldhaber-Fiebert, S. N., Tristan, M. L., & Nathan, D. M. (2003). Randomized controlled community based nutrition and exercise intervention improves glycaemia and cardiovascular risk factors in type 2 diabetic patients in rural Costa Rica. *Diabetes Care*, 26, 24-29. <http://dx.doi.org/10.2337/diacare.26.1.24>

- Goldsmith, P. A. (2003). Race relations and racial patterns in sports participation. *Sociology of Sport Journal*, 20(2), 147-171.
- Gupta, N., Goel, K., Shah, P., & Misra, A. (2012). Childhood obesity in developing countries: Epidemiology, determinants and prevention. *Endocrine Reviews*, 33, 48-70. <http://dx.doi.org/10.1210/er.2010-0028>
- Hardcastle, S., Blake, N., & Hagger, M.S. (2012). The effectiveness of a motivational interviewing primary-care based intervention on physical activity and predictors of change in a disadvantaged community. *Journal of Behavioural Medicine*, 35(3), 318–333. <http://dx.doi.org/10.1007/s10865-012-9417-1>
- Hecht, J., Borrelli, B., Breger, R. K. R., DeFrancesco, C., Ernst, D., & Resnicow, K. (2005). Motivational interviewing in community-based research: experiences from the field. *The Society of Behavioural Medicine*, 29, 29-34. [http://dx.doi.org/10.1207/s15324796abm2902s\\_6](http://dx.doi.org/10.1207/s15324796abm2902s_6)
- Hettema, J., Steele, J., & Miller, W. R. (2005). Motivational interviewing. *Annual Revisions of Clinical Psychology*, 1, 91-111. <http://dx.doi.org/10.1146/annurev.clinpsy.1.102803.143833>
- International Diabetes Federation. (2009). *Diabetes Atlas* (4<sup>th</sup> edn.). Brussels: IDF.
- James, P. T., Rigby, N., & Leach, R. (2004). The obesity epidemic, metabolic syndrome and future prevention strategies. *European Journal of Cardiovascular Prevention and Rehabilitation*, 11, 3-8.
- Kengne, A., Amoah, A. G., & Mbanaya, J. C. (2005). Cardiovascular complications of diabetes mellitus in sub-Saharan Africa. *Circulation*, 112, 3592-3601. <http://dx.doi.org/10.1161/CIRCULATIONAHA.105.544312>
- Keyserling, T. C., Samuel-Hodge, C. D., Ammerman, A. S., Ainsworth, B. E., Henriquez-Roldan, C. F., Elasy, T. A., ... Bangdiwala, S. I. (2002). A randomized control trial of an intervention to improve self-care behaviors of African-American women with type 2 diabetes. *Diabetes Care*, 25, 1576-1586.
- Kimani-Murage, E. W., Kahn, K., Pettifor, J. M., Tollman, S. M., Dunger, D. B., Gómez-Olivé, X. F., & Norris, S. A. (2010). The prevalence of stunting, overweight and obesity, and metabolic disease risk in rural South African children. *BioMed Central Public Health*, 10, 1-13. <http://dx.doi.org/10.1186/1471-2458-10-158>
- Knowler, W. C., Barrett-Connor, E., Fowler, S. E., Hamman, R. F., Lachin, J. M., Walker, E. A., & Nathan, D. M. (2002). Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *The New England Journal of Medicine*, 346, 393-403.
- Koplan, J. P., Liverman, C. T., & Kraak, V.I. (2005). Preventing childhood obesity: Health in the balance: Executive summary. *Journal of the American Dietetic Association*, 105, 131-138. <http://dx.doi.org/10.1016/j.jada.2004.11.023>
- Lambert E. V., & Kolbe-Alexander T. (2005). Physical activity and chronic diseases of lifestyle in South Africa. In J. Fourié, K. Steyn & N. J. Temple (Eds.), *Chronic diseases of lifestyle in South Africa: 1995-2005*. Tygerberg, South Africa: Medical Research Council.
- Lee, W. W. R. (2007). An overview of pediatric obesity. *Pediatric Diabetes*, 8, 76-87. <http://dx.doi.org/10.1111/j.1399-5448.2007.00337.x>

- Levitt, N. S. (1996). Diabetes Mellitus in Black South Africans. *International Journal of Diabetes in Developing Countries*, 16, 41-44.
- Levitt, N. S., Katzenellenbogen, J. M., Bradshaw, D., Hoffman, M. N., & Bonnici, F. (1993). The prevalence and identification of risk factors for NiDDM in urban Africans in Cape Town, South Africa. *Diabetes Care*, 16, 601-607. <http://dx.doi.org/10.2337/diacare.16.4.601>
- Mash, B., Powell, D., du Plessis, F., van Vuuren, U., Michalowska, M., & Levitt, N. (2007). Screening for diabetic retinopathy in primary care with a mobile fundal camera - evaluation of a South African pilot project. *South African Medical Journal*, 97, 1284-1288.
- Mash, R. J., & Allen, S. (2004). Managing chronic conditions in a South African primary care context: exploring the applicability of Brief Motivational Interviewing. *South African Family Practice*, 46, 21-26.
- Mayosi, B. M., Flisher, A. J., Lalloo, U. G., Sitas, F., Tollman, S. M., & Bradshaw, D. (2009). The burden of non-communicable diseases in South Africa. *The Lancet*, 374, 934-947 . [http://dx.doi.org/10.1016/S0140-6736\(09\)61087-4](http://dx.doi.org/10.1016/S0140-6736(09)61087-4)
- Mchunu, S., & le Roux, K. (2010). Nonparticipation in sport by black learners with special reference to gender, grades, family income and home environment. *South African Journal for Research in Sport, Physical Education and Recreation*, 32(1), 85-98.
- Miller, W. R. (1994). Motivational interviewing: III. On the ethics of motivational intervention. *Behavioral and Cognitive Psychotherapy*, 22, 111-123. <http://dx.doi.org/10.1017/S1352465800011905>
- Miller, W. R., & Rollnick, S. (1991). *Motivational interviewing: preparing people to change addictive behaviors*. New York: Guilford
- Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change* (2<sup>nd</sup> ed.). New York: Guilford Press.
- Misra, A., & Khurana, L. (2008). Obesity and metabolic syndrome in developing countries. *Journal of Clinical Endocrinology and Metabolism*, 93, S9-S30. <http://dx.doi.org/10.1210/jc.2008-1595>
- Misra, A., Singhal, N., & Khurana, L. (2010). Obesity, the metabolic syndrome, and type 2 diabetes in developing countries: role of dietary fats and oils. *Journal of the American College of Nutrition*, 29 (3 Supplement 1), 289S-301S. <http://dx.doi.org/10.1080/07315724.2010.10719844>
- Moe, E. L., Elliot, D. L., Goldberg, L., Keuhl, K. S., Stevens, V. J., Breger, R. K. R., & Dolen, S. (2002). Promoting healthy lifestyles: alternative models. Effects (PHLAME). *Health Education Research*, 17, 586-596. <http://dx.doi.org/10.1093/her/17.5.586>
- Mollentze, W. (2012). Management of type 2 diabetes in primary healthcare. *South African Journal of Diabetes and Vascular Disease*, 9(3), 38.
- Mollentze, W. F., Levitt, N. S. (2005). Diabetes mellitus and impaired glucose tolerance in South Africa. In J. Fourié, K. Steyn, & N. J. Temple (Eds.), *Chronic diseases of lifestyle in South Africa since 1995-2005* (pg. 109-121). Tygerberg, South Africa: Medical Research Council.

- Morgan, P. J., & Hansen, V. (2008). Classroom teacher's perceptions to the impact of barriers to teaching physical education on the quality of physical education programs. *Research Quarterly for Exercise and Sport*, 70(4), 506-516.
- Mvo, Z., Dick, J., & Steyn, K. (1999). Perceptions of overweight African women about acceptable body size of women and children. *Curationis*, 22, 27-31. <http://dx.doi.org/10.4102/curationis.v22i2.719>
- Ndlovu, P. P., & Roos, S. D. (1999). Perceptions of black women of obesity as a health risk. *Curationis*, 22, 47-55. <http://dx.doi.org/10.4102/curationis.v22i2.729>
- Ogbera, O. A., Osa, E., Edo, A., & Chukwum, E. (2008). Common clinical features of diabetic foot ulcers: perspectives from a developing nation. *International Journal of Lower Extremity Wounds*, 7, 93-98. <http://dx.doi.org/10.1177/1534734608318236>
- Osei, K., Schuster, D. P., Amoah, A. G., & Owusu, S. K. (2003). Diabetes in Africa. Pathogenesis of type 1 and type 2 diabetes mellitus in sub-Saharan Africa: Implications for transitional populations. *Journal of Cardiovascular Risk*, 10, 85-96. <http://dx.doi.org/10.1177/174182670301000203>
- Peterson, K. E., Soenson, G., Pearson, M., Hebert, J. R., Gottlieb, B. R., & McCormick, M. C. (2002). Design of an intervention addressing multiple levels of influence on dietary and activity patterns of low-income, postpartum women. *Health Education Research*, 17, 531-540. <http://dx.doi.org/10.1093/her/17.5.531>
- Puljevic, C. & Learmonth, D. (2014). Substance abuse prevention in Cape Town's peri-urban settlements: local health trainers' perspectives, *Health Psychology and Behavioral Medicine: An Open Access Journal*, 2, 183-197. <http://www.tandfonline.com/doi/full/10.1080/21642850.2013.878659>.
- Puoane, T. R., Fourie, J. M., Shapiro, M., Rosling, L., Tshaka, N. C., & Oelofse, A. (2005). 'Big is beautiful' – an exploration with urban black community health workers in a South African township. *South African Journal of Clinical Nutrition*, 18, 6-15.
- Puoane, T. R., Steyn, K., & Bradshaw, D. (2002). Obesity in South Africa: the South African demographic and health survey. *Obesity Research*, 10, 1038-1048. <http://dx.doi.org/10.1038/oby.2002.141>
- Puoane, T. R., Zulu, J., Tsolekile, L., Bradley, H. A., & Hughes, G. D. (2007). *Promoting healthy lifestyles: community health workers' intervention program for primary prevention of non-communicable diseases in Khyalitsha, an urban township in Cape Town*. Bellville: SOPH.
- Puoane, T. R., Bradley, H., & Hughes, G. D. (2005). Obesity among black South African women. *Human Ecology*, 13, 91-95.
- Puoane, T. R., Tsolekile, L., & Steyn, N. (2010). Perceptions about body image and sizes among black African girls living in Cape Town. *Ethnicity & Disease*, 20, 29-34.
- Ramachandran, A., Snehalatha, C., Mary, S., Mukesh, B., Bhaskar, A. D., & Vijay, V. (2006). The Indian Diabetes Prevention Programme shows that lifestyle modification and metformin prevent type 2 diabetes in Asian Indian subjects with impaired glucose tolerance (IDPP-1). *Diabetologia*, 49, 289-297. <http://dx.doi.org/10.1007/s00125-005-0097-z>
- Reddy, S. P., Resnicow, K., James, S., Kambaran, N., Omardien, R., & Mbewu, A. D. (2008). Underweight, overweight and obesity among South African adolescents:

- results of the 2002 National Youth Risk Behaviour Survey. *Public Health and Nutrition*, 12(2), 203-207. <http://dx.doi.org/10.1017/S1368980008002656>
- Resnicow, K., Dilorio, C., Soet, J. E., Borrelli, B., Ernst, D., Hecht, J., & Thevos, A. K. (2002a). Motivational interviewing in medical and public health settings. In W. R. Miller & S. Rollnick, (Eds.), *Motivational interviewing: preparing people for change* (pp. 251-269). New York: Guilford Press.
- Resnicow, K., Jackson, A., Braithwaite, R., Dilorio, C., Blisset, D., Rahotep, S., & Periasamy, S. (2002b). Healthy body/ healthy spirit: a church-based nutrition and physical activity intervention. *Health Education Research*, 17, 562-573. <http://dx.doi.org/10.1093/her/17.5.562>
- Rheeder, P. (2006). Type 2 diabetes: the emerging epidemic. *South African Family Practice*, 48(10), 20.
- Rollnick, S., Heather, N., & Bell, A. (1992). Negotiating behaviour change in medical settings: The development of brief motivational interviewing. *Journal of Mental Health*, 1, 25-37. <http://dx.doi.org/10.3109/09638239209034509>
- Rossouw, H. A., Grant, C. C., & Viljoen, M. (2012). Overweight and obesity in children and adolescents: The South African problem. *South African Journal of Science*, 108, 1-7. <http://dx.doi.org/10.4102/sajs.v108i5/6.907>
- Searight, H. R. (1999). *Behavioral Medicine: A primary care approach*. Philadelphia, PA: Taylor Francis.
- Singer, R., Hausenblas, H., & Janelle, C. M. (2001). *Handbook of sport psychology*. New York: John Wiley & Sons.
- Steyn, K., Fourie, J., & Temple, N. (2006). *Chronic diseases of lifestyle in South Africa: 1995-2005*. Cape Town, South Africa: South African Medical Research Council.
- Steyn, K., Gazianota, T. A., Bradshaw, D., Laubscher, J., & Fourie, J. M. (2001). Hypertension in South African adults: results from the Demographic Health Survey, 1998. *Journal of Hypertension*, 19(9), 1717-1725. <http://dx.doi.org/10.1097/00004872-200110000-00004>
- Stretcher, V. J., DeVellis, B. M., Becker, M. H., & Rosenstock, I. M. (1986). The role of self-efficacy in achieving health behavior change. *Health Education Quarterly*, 13, 73-91.
- Tremblay, M. S., Warburton, D. E. R., Janssen, I., Paterson, D. H., Latimer, A. E., Rhodes, R. E., Kho, M. E., Hicks, A., LeBlanc, A. G., Zehr, L., Murumets, K., & Duggan, M. (2011). New Canadian physical activity guidelines. *Applied Physiology, Nutrition and Metabolism*, 36, 36-46. <http://dx.doi.org/10.1139/H11-009>
- Tuei, V. C., Maiyoh, G. K., & Ha, C. (2010). Type 2 diabetes mellitus and obesity in sub-Saharan Africa. *Diabetes/Metabolism Research and Reviews*, 26, 433-445. <http://dx.doi.org/10.1002/dmrr.1106>
- Van der Merwe, M. T., & Pepper, M. S. (2006). Obesity in South Africa. *Obesity reviews*, 7, 315-322. <http://dx.doi.org/10.1111/j.1467-789X.2006.00237.x>
- Van Rooijen, A. J., Rheeder, P., Eales, C. J., & Becker, P. J. (2004). Effect of exercise versus relaxation on haemoglobin A<sub>1c</sub> in Black females with type 2 diabetes mellitus. *Quarterly Journal of Medicine*, 97(6), 343-351. <http://dx.doi.org/10.1093/qjmed/hch061>

- Weissberg, R. P., Kumpfer, K. L., Seligman, M. E. P. (2003). Prevention that works for children and youth: an introduction. *American Psychologist*, 58, 425-423. <http://dx.doi.org/10.1037/0003-066X.58.6-7.425>
- Welch, G., Rose, G., & Ernst, D. (2006). Motivational Interviewing and diabetes: what is it, how is it used, and does it work? *Diabetes Spectrum*, 19(11), 5-11. <http://dx.doi.org/10.2337/diaspect.19.1.5>
- West, D. S., DiLillo, V., Bursac, Z., Gore, S. A., & Greene, P. (2007). Motivational interviewing improves weight loss in women with type 2 diabetes. *Diabetes care*, 30(5), 1081-1087. <http://dx.doi.org/10.2337/dc06-1966>
- Wild, S. A., Roglic, G., Green, A., Sicree, R., & King, H. (2004). Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diabetes Care*, 27(5), 1047-1053. <http://dx.doi.org/10.2337/diacare.27.5.1047>
- Yamaoka, K., & Tango, T. (2005). Efficacy of lifestyle education to prevent type 2 diabetes: a meta-analysis of randomized controlled trials. *Diabetes Care*, 28, 2780-2786. <http://dx.doi.org/10.2337/diacare.28.11.2780>

### Suggestions for Further Reading

- Amosun, S. L., Reddy, P. S., Kambaran, N., & Omardien, R. (2007). Are students in public high schools in South Africa physically active? Outcome of the first South African National Youth Risk Behaviour Survey. *Canadian Journal of Public Health*, 98(4). Retrieved from [www.ncbi.nlm.gov/pubmed/17896731](http://www.ncbi.nlm.gov/pubmed/17896731)
- Colby, S. M., Monti, P. M., Barnett, N. P., Rohsenow, D. J., Weissman, K., Spirito, A., Woolard, R. H., & Lewander, W. J. (1998). Brief motivational interviewing in a hospital setting for adolescent smoking: a preliminary study. *Journal of Consulting and Clinical Psychology*, 66. Retrieved from [www.ncbi.nlm.nih.gov/pubmed/9642898](http://www.ncbi.nlm.nih.gov/pubmed/9642898)
- Misra, A., & Khurana, L. (2008). Obesity and metabolic syndrome in developing countries. *Journal of Clinical Endocrinology and Metabolism*, 93. Retrieved from [www.ncbi.nlm.nih.gov/pubmed/18987276](http://www.ncbi.nlm.nih.gov/pubmed/18987276)
- Tuei, V. C., Maiyoh, G. K., & Ha, C. (2010). Type 2 diabetes mellitus and obesity in sub-Saharan Africa. *Diabetes/Metabolism Research and Reviews*, 26. Retrieved from [www.ncbi.nlm.nih.gov/pubmed/20641142](http://www.ncbi.nlm.nih.gov/pubmed/20641142)
- Wild, S. A., Roglic, G., Green, A., Sicree, R., & King, H. (2004). Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diabetes Care*, 27(5). Retrieved from [www.ncbi.nlm.nih.gov/pubmed/17337504](http://www.ncbi.nlm.nih.gov/pubmed/17337504)

Also look out for Community Health Psychology lectures by Dr Despina Learmonth on: <http://www.youtube.com/user/DoctorDee2012>

## Discussion Questions

1. Why are some of the physical and psychological benefits of regular exercise?
2. What are some of the practical barriers to employing MI or CBT when working with South African peri-urban youth?
3. Why is it so important to address this issue in the youth, rather than in adults?
4. What other problematic health behaviours could MI and CBT address in low SES areas, and how could these techniques be used to address them?
5. Recall examples of problematic health behaviours in your own health (like overeating or too little exercise). Discuss what factors are instrumental in perpetuating this behavior change despite your knowledge of its harm.
6. Why is education and “information bashing” not effective for instilling behavior change?
7. Why are MI and CBT health psychology interventions so effective in addressing behaviour change, and why could they be useful for a multicultural society like South Africa? Why may they not be appropriate as behavior change tools?

## About the Authors

**Carmen Anderson**, BSocSci (Hons) Psychology, obtained her degree from the University of Cape Town, South Africa. Her main research interest lies in analyzing the dream qualities of epileptic patients. However, she is also interested in the application of health psychology interventions for addressing the many health problems facing South African communities. She has contributed to the MI/CBT training programme used for counseling community health trainers. Email: [mypineappleunderthesea@gmail.com](mailto:mypineappleunderthesea@gmail.com)

**Anica Jansen van Vuuren**, BSocSci (Hons) Psychology, is currently in her first year of Masters training as a Clinical Neuropsychologist in the Department of Psychology at the University of Cape Town, South Africa. She has worked on the efficacy of using MI and CBT techniques to address the high prevalence of Foetal Alcohol Syndrome (FAS) in the Western Cape, as well as hypertension in the broader South African context. Her current research investigates the role hemodynamic and geometric principles play in hemispheric lateralization. She also contributed to the MI/CBT training programme used for counseling community health trainers. Email: [anicajvv@gmail.com](mailto:anicajvv@gmail.com)

**Despina Learmonth**, DPsych. currently works as a lecturer at the University of Cape Town, South Africa, and has a small private counseling practice. Despina’s research interests centre on women’s health in the South African community; particularly sex work, community health psychology, health behaviour change and psychological empowerment. Email: [despina@learmonth.com](mailto:despina@learmonth.com)