

## CHAPTER 6

### CONCLUSIONS

The aim of this study was to investigate if an exercise intervention would be effective to improve HbA<sub>1c</sub> levels in an urban black female diabetic population. Information was also sought on the knowledge of and attitudes towards diabetes and exercise of this population and their current physical activity levels. Personal and environmental barriers to doing exercise were determined; also what the population's outcome expectations of performing exercise were. The research was conducted in three phases and consisted of quantitative and qualitative data capturing. Data obtained from the first two phases of the study were used to plan the exercise intervention.

The most significant finding of this research was that **exercise as implemented in this study was not more effective than supervised self-relaxation training in improving HbA<sub>1c</sub> levels in black urban female patients with Type 2 DM** after a 12-week intervention period. We have seen that an intervention of any kind is welcomed and enjoyed by the women with Type 2 DM, and that it contributed towards an enhanced quality of life for individual patients. Interventions in the exercise and relaxation groups led to improvements in HbA<sub>1c</sub>. The improvements in HbA<sub>1c</sub> in both groups were obtained by non-pharmacological means.

The patients in the study had many risk factors for diabetes-related complications and are representative of other urbanised South African populations. The socio-demographic profiles of patients in this study were similar to that of other international studies. I therefore consider the results of this study to be transferable to other populations.

The findings of this study reflect the complexity of helping patients to implement and sustain changes in lifestyle to improve diabetes self-management. Furthermore, the results of the different phases of the study contributed towards our understanding of the complex integration of relationships between the characteristics of the individual patients and the characteristics of the environment from which they come and how it may influence clinical outcomes.

Accordingly I conclude that unless the characteristic of the individual patient and the environment from which she comes is addressed, no intervention will be successful. It is therefore the role of the health care worker to identify the barriers to exercise and to accompany the patient on the road to a healthier lifestyle.

The principal goal of clinical care is to improve patient outcomes. Improved patient outcomes would mean improved control of the disease and therefore less diabetes-related complications, improved functioning and perception of health and eventually overall quality of life.<sup>278</sup> Blood glucose control, medical nutritional therapy, education and physical activity are the cornerstones of diabetes management and are important to prevent many diabetes-related complications.<sup>8,38</sup> To realise these outcomes, the patients have to be active participants in making changes in long-established behaviours. Although the intervention was planned on the basis of knowledge gained from the first and second phases of the study, it was clear that the women were not ready to accept self-responsibility for unsupervised exercise.

It was however clear from the primary and secondary outcomes of both groups, that doing exercise or relaxation compared to potentially nothing along with education does appear to improve health and quality of life for these women. [University of Pretoria etd – Van Rooijen, A J \(2006\)](#)

The challenge facing the research team was to develop an exercise programme to change sedentary lifestyle behaviour in a population of black female Type 2 DM patients. Exercise is one of the cornerstones of diabetes management, which offers a non-pharmacological means of controlling hyperglycaemia, lower blood pressure and encourages weight loss.<sup>12,13</sup> Furthermore it improves the functionality of the patient, reduces cardiovascular risk factors such as hypertension and contributes to improved quality of life.<sup>14,15,27</sup>

Another important finding of this research was that certain cultural practices and community activities took priority over adherence to exercise prescriptions. Community activities, such as religious meetings, care of children and the ill and attending funerals are important activities in the life of the female Type DM patient. The senior stature of these women in the community means that certain community activities take first priority and that all other daily activities are subordinate to these community commitments. Apart from illness, these community activities were reasons given for not doing home exercises or attending the exercise sessions at the Mamelodi hospital. A patient may therefore have started to change her sedentary lifestyle by attending the sessions at the hospital, but relapsed because of demands on her time and energy.

Poor socio-economic and domestic circumstances and stressful life situations are psychosocial factors that may have determined the women's adaptation to diabetes and adherence to the diabetic regimen. This was illustrated by the improvement of HbA<sub>1c</sub> levels in the control group. High unemployment, high crime rates and family problems such as HIV / AIDS contribute to stress in the family and contribute to psychological stress in both groups of participants. There is a dire need for social welfare services in this population.



Social and psychological support is necessary for health-related behaviour change. Since the participants came from a community and age group, which do not regularly engage in exercise, social and psychological support for doing exercise and changing lifelong habits may have been lacking.

It has been shown that social problems influence learning and behaviour. The sessions at the hospital may have offered an escape from the mentioned environmental and personal stresses. However, this support was lacking when the patients returned home and may have contributed to poor adherence to home exercises.

The outcomes of this study therefore break new ground in the search for understanding the role of exercise in black female Type 2 diabetics. We have seen that data on exercise in Type 2 DM Mellitus in the African population is scarce. The importance of exercise as a non-pharmacological means to lower HbA<sub>1c</sub> cannot be negated. Therefore, this study has contributed valuable new knowledge in this field and also a better understanding of the complexity of behavioural change in an urban black population.

The outcomes are furthermore important against the background of an increasing prevalence of diabetes in South Africa, especially amongst females and problems with diabetes control. Also of importance is the fact that the incidence of Type 2 DM is increasing in children and that the traditional lifestyle is being abandoned for a westernised lifestyle with decreased physical activity and poor dietary habits. Education of and positive health-related lifestyle changes in adult female patients with Type 2 DM can empower them to educate their families and also the wider community about healthy lifestyles and the prevention and control of this disease can be addressed.

The safety of unsupervised exercise by women with longstanding diabetes was a concern of the author. Since compulsory community service for physiotherapists has now been implemented in South Africa, more physiotherapists are available in the public health system.

These physiotherapists can be used to supervise and run exercise programmes in the community. [University of Pretoria etd – Van Rooijen, A J \(2006\)](#)

Regular supervised exercise sessions per week may enable patients to attend sessions when convenient for them. The participants of this study indicated that they were willing to become group leaders for exercise support groups. They are important contact persons to facilitate negotiations with the different community and church leaders in order to obtain suitable venues for exercise classes.

The results of this study have provided a foundation for future research on exercise for black females with Type 2 DM Mellitus. The participants have been empowered with knowledge, exercise and relaxation skills. The empowerment of the women with Type 2 DM will hopefully contribute to their general knowledge of the disease and therefore also improve the knowledge of their families and the community.

I conclude that it is possible to improve blood glucose control by means other than medication in urban black female patients with Type 2 DM. The patients are willing to change their sedentary lifestyle to a more active one, but several environmental and personal barriers impact negatively on their attempts to do so. The role of the health care worker is to identify these barriers and to accompany the patient on the road to a healthier lifestyle. However, this population of women may need more assistance and support initially to eventually take self-responsibility for their diabetes self-management.

In the words of one of the participants: “ *I want to feel relaxed and peaceful.....now after we have exercised we will be laughing and we will feel very good afterwards.*”

## CHAPTER 7

### RECOMMENDATIONS

On completion of this research the following recommendations for further research on exercise for Type 2 DM Mellitus patients are made:

1. That the effect of an exercise intervention should be assessed after a run-in period, because earlier assessment may be biased as a result of changes made only because subjects are conscious of being studied. A run-in period before the start of the intervention is necessary to prevent the Hawthorne effect in these patients. An initial run-in period such as a period of education and small group meetings, before randomisation into exercise and relaxation groups may have distinguished between the effect of the exercise and the effect of study participation.
2. That the relaxation group should receive the usual care and be wait-listed for an intervention similar to the exercise group after the study is completed. In such an instance it could be called a control group.
3. That change in the use of prescribed oral hypoglycaemic agents be investigated during an exercise intervention.
4. That the exercise intervention is repeated for at least one year with supervised exercise sessions at community-based venues.
5. That the exercise intervention should include individualised counselling sessions with each participant and the monitoring of weight loss.

6. That the use of accelerometers as a means to detect both frequency and velocity of movement in this population be investigated.
7. That the effect of resistance-type exercises be investigated in this population.
8. That a psychologist and social worker should be part of the research team to address the social problems of participants