

Community Development as a Possible Approach for the Management of Diabetes Mellitus Focusing on Physical Activity Lifestyle Changes: A Model Proposed for Maltese People with Diabetes

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Treating diabetes mellitus is very expensive and with 10% prevalence, the Maltese healthcare can face serious problems. Despite the evidence that regular exercise lowers blood glucose, few persons with diabetes participated in physical activity due to fear of hypoglycaemia and other barriers. Conventional management of diabetes imposes lifestyle changes and favours pharmaceutical administration. Implementation of grassroots initiatives through health needs assessment leading to community development is an alternative strategy. The main purposes of this article are, to present clear information on community development as an alternative to conventional diabetes interventions, and to serve as a model to stimulate interest amongst the authorities to use this approach for diabetes management. In a fictitious diabetes community scenario, based on available, limited literature, lack of physical activity was identified as the main need to improve health. Through a 'bottom-up' approach based on empowerment and participation, the sedentary community gradually progressed to active subgroups that eventually became less dependent on anti-diabetic medications and car-use. There was the possibility of a sports and recreational strategy. Health promoters were leading players, followed by local councils and other stakeholders. After publishing physical activity guidelines, holding regular recreational activities and celebrations, the community development was sustainable, cost-effective and environmental friendly. Project evaluation was crucial. Funding was governmental and partly sponsored by health-compatible enterprises. Albeit time-consuming, community development can be the most ethical and effective form of health promotion for diabetes healthcare. This approach offers a challenge to the traditional medical model.

Keywords: community development; diabetes; empowerment; participation; physical activity

Introduction

The Maltese diabetes community

Over 40,000 Maltese people were diagnosed with diabetes mellitus (Maltese Diabetes Association, 2014). This accounts for 10% of the population, 9% being type 2 (Rocchiccioli, O'Donoghue, & Buttigieg, 2005). With such prevalence, the expenses associated with its cure could overburden the Maltese healthcare system (Rocchiccioli et al., 2005).

Facts and recommendations

Diabetes is the single most costly health problem in Westernized countries; one reason being that due to low adherence to certain recommendations including exercise, at least half of those diagnosed still did not achieve glycaemic control (Skovlund & Peyrot, 2005).

A prescription of moderate-intensity, aerobic activities for 30 minutes three times weekly has long been known to lower blood glucose, improve glucose

tolerance and enhance peripheral insulin sensitivity (Young, 1995). Evidence-based literature for prescribing exercise for diabetes was analysed by Pedersen and Saltin (2006) who advised that the danger associated with inactivity was greater than with exercising.

However, few patients with diabetes participated in physical activity (PA), and the intensity of those who did was low (Thomas, Alder, & Leese, 2004). Despite the strong belief that regular PA should be integrated into diabetes management, 61 and 68% of types 1 and 2 in UK were categorized as inactive (Dubé, Valois, Prud'homme, Weisnagel, & Lavoie, 2006). The highest barriers for PA in diabetes were hypoglycaemic fear and lack of insulin knowledge (Brazeau, Rabasa-Lhoret, Strychar, & Mircescu, 2008).

Empowerment, including non-compliance with medical advice, maximized wellbeing in people with diabetes (Campbell et al., 2003). This could suggest the need to move away from the traditional model of doctor-knows-best to a more egalitarian relationship

between patients and practitioners (Naidoo & Wills, 2010).

A lifestyle intervention involving 150 minutes of weekly PA was shown to be significantly more effective than the administration of metformin; the lifestyle modification had reduced the risk of type 2 diabetes by 58% while metformin treatment only reduced it by 31% (Knowler et al., 2002). The reduction was similar to the Finnish trial (Pedersen & Saltin, 2006). Maltese patients are entitled for free medicines and metformin is one of them.

The Ontario Ministry of Health and Long-term Care (OMHLC, 2012) recommended that communities need to take action by encouraging physical and recreational activities, whereas health promoters need to assess risks and educate people on diabetes prevention and treatment. Moreover, medical interventions should change from diagnose-and-cure strategies to coaching ones (OMHLC, 2012).

Evidence from a systematic review supports the notion that involving patients from the community can contribute towards positive changes in the provision of services across different settings (Crawford et al., 2002). A movement in favour of promoting community development (CD) for the health sector exists.

Methodology of literature searching

Literature search in PubMed, Cochrane Library, Web of Knowledge, CINAHL (Cumulative Index to Nursing and Allied Health Literature), Google Scholar, Google and even SportDiscus (due to the element of PA) covered all years for English language studies. The search, which also probed into leading textbooks on health promotion, focused on CD, diabetes, PA and exercise as the main inclusion criteria.

What is already known on community-based approaches for diabetes?

Although the principles that make up CD are soundly based, there were no records of applying CD for people with diabetes.

Only a small-scale investigation on diabetes prevention was identified. After two years of using a CD model for diabetes risk reduction in a group at high risk of diabetes, there was a reduction in waist circumference (-4 ± 10 cm vs $+2 \pm 7$ cm in control, $P < 0.001$), an increase in diabetes knowledge ($46 \pm 26\%$ vs $4 \pm 17\%$ in control, $P < 0.001$) and an increase in the proportion exercising regularly ($+22\%$ vs -8% in control, $P < 0.05$) (Simmons et al., 1998).

Aims of the review

The article aims to (a) present clear information on CD as an alternative approach to conventional diabetes interventions, (b) provide guidance on how to apply such a strategy, be able to evaluate it and sustain its continuity and (c) inform how it could impact on the environment.

Intervention Phases and Justifications for Key Approaches in a Hypothetical Diabetes Community Development

The flow of the design phases of the community intervention was partly influenced by the planning models of Ewles and Simnett (1999) and Dignan and Carr (Green & Tones, 2010). The illustration of a flow chart (figure 1) should help readers follow the progress of a fictitious diabetes community throughout the text without losing track of the transition stages whilst going through the literature.

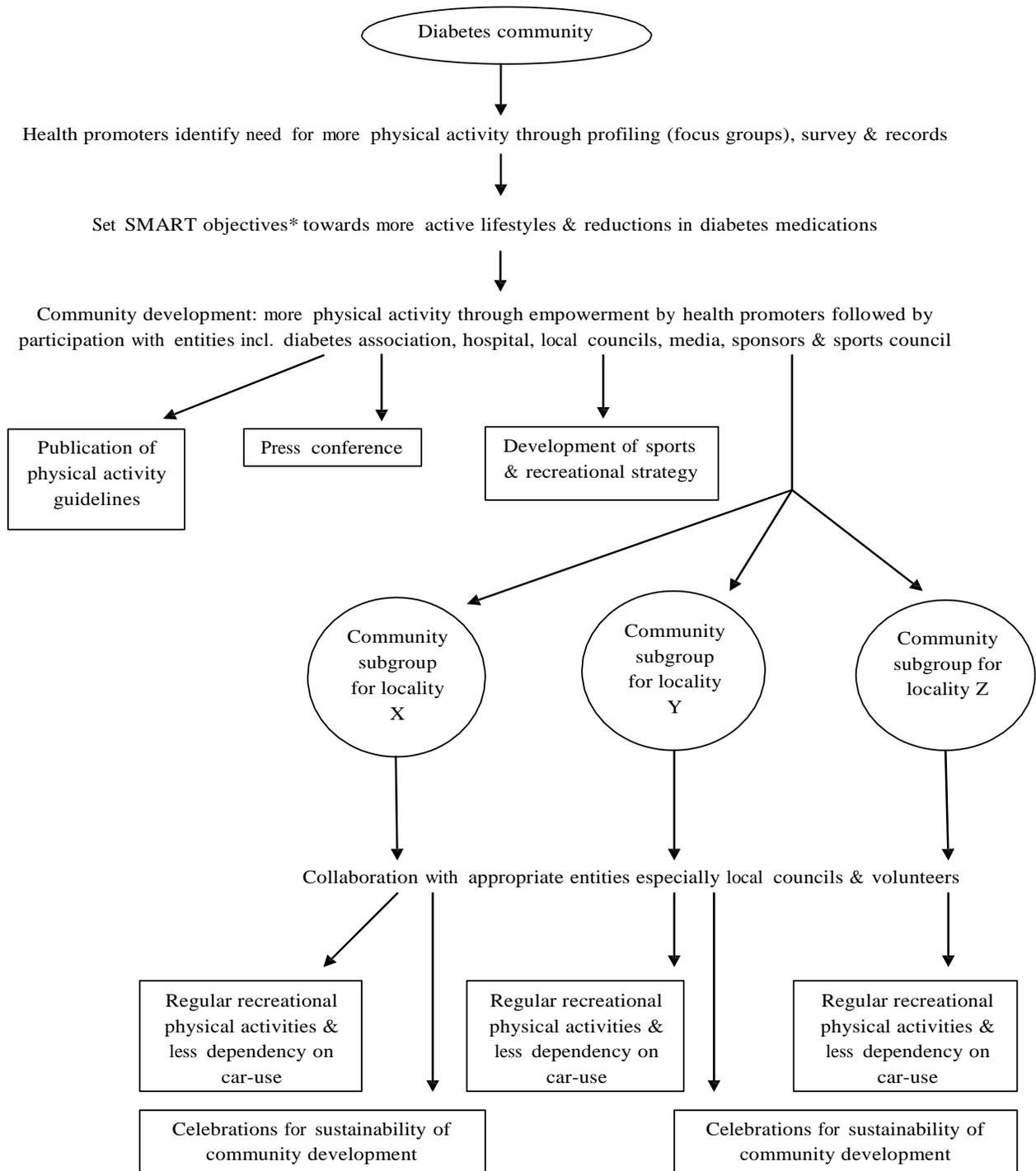


Figure 1. Flow chart for diabetes community development model showing possible transitions from a sedentary community to several active subgroups. *SMART objectives have to be specific, measurable, achievable, realistic and timed.

Identifying health needs

There were two needs of particular relevance to this community: felt needs (equated with wants), and expressed needs (consisting of felt needs turned into demands) (Green & Tones, 2010; Hooper & Longworth, 2002).

Whereas health professionals usually thought of health needs as services they could provide, patients had different ideas about what affected their health (Wilkinson & Murray, 1998). Many interventions have been service-led rather than needs-led, but the patients' needs are now accepted as being central to any project (Wilkinson & Murray, 1998). Moreover, people were more likely to support needs which they had identified (Community Tool Box [CTB], 2014a).

Personal issues such as fear and hostility were common barriers to health access, and community services had to understand and alleviate these barriers that participants faced (CTB, 2014b). However, a need is not necessarily determined by the scale of a health problem, but could also be determined by the ability to benefit (Green & Tones, 2010). Hence, in addition to the expected need to achieve health gain via improved blood glucose levels through willingness for regular PA, there were less perceived needs related to reassurance and to access to information and services.

A well planned needs assessment is key precursor to evaluation (World Health Organization [WHO], 2001). The needs that were rated most important got addressed. Health needs assessment (HNA), if performed properly, can identify which actions that improve health have greatest priority (Naidoo & Wills, 2009).

Community profiling as part of HNA (Jack & Holt, 2008) was used in the community. Profiling is an essential tool for community work because it introduces professionals to the community and is a way of making contact with people who are often suspicious of outsiders (Henderson, Summer, & Raj, 2004). Planners normally focused on problems rather than community strengths (Norheim, 1999) but in this scenario, the profiling exercise included the strengths and assets besides the needs.

Routine information gathered from the Maltese Diabetes Association (association) and outpatient records supported by literature indicated that there was a need for diabetes patients to do more PA. With timeframes not being an issue, the Health Promotion Directorate (directorate) embarked on focus groups to reach patients from all localities. With around twelve participants per group, focus groups allowed members of the community to express their needs. When the data that emerged was analyzed, the needs of concern to most diabetes people were the lack of

knowledge and fears that they had regarding taking exercise for their condition.

The next phase involved sending surveys to all registered patients. A well conducted postal survey of a representative sample usually gave a reliable estimate of the burden of community morbidity (Wilkinson & Murray, 1998).

The rigor and validity of qualitative approach depended on triangulation (Murray, Tapson, Turnbull, McCallum, & Little, 1994) with focus groups' data on the need for more PA being crosschecked with the needs identified by the postal survey and by analyzing the association and hospital records.

Intervention aims and objectives

The aims involved the community becoming more aware about the safe benefits of PA and more active and less dependent on medication. Following termination of the initiative, the following SMART (specific, measurable, achievable, realistic and timed) objectives were expected:

- to have at least 75% of the community members with better understanding and freedom from fear about regular PA benefits;
- to have 50% of the community adopting physically active lifestyles;
- to decrease the community mean glycated haemoglobin (HbA1c) level by half a percentage point;
- and to reduce the consumption of anti-diabetic agents by 20%.

Henderson et al. (2004) described the translation of ideas into good practice as the 'litmus test' for CD theory. This was reflected in more people who were doing regular PA. Timed targets had to reflect the objectives and be achievable, in addition to encouraging greater cooperation (Hooper & Longworth, 2002).

Rationale for choosing community development

The traditional concept in which health authorities rationally planned health needs that were objectively determined through epidemiological studies was criticized as failing to account for inequalities and environmental degradation (Laverack & Labonte, 2000). The WHO (2001) recognized the limited effectiveness of conventional didactic strategies and the rise of the CD movement which promoted grassroots in contrast to 'top-down' initiatives.

As government policy change was not the objective, the directorate applied a CD strategy which aimed to empower people with diabetes to gain control over the factors that influenced their health.

“Community development is about building active and sustainable communities based on social justice and mutual respect. It is about changing power structures to remove the barriers that prevent people from participating in the issues that affect their lives” (Green & Tones, 2010, p. 408).

The core principles of CD are social justice, participation, equality, learning and cooperation (Green & Tones, 2010). Social inclusion, another value, avoids labelling people and works with their strengths and capacities (Henderson et al., 2004). Indeed, CD is regarded as the most ethical and effective form of health promotion (Naidoo & Wills, 2009). The practitioners in this scenario did not coerce the community members but rather facilitated informed choices in favour of PA, thus respecting their autonomy. The application of CD is also recognized by the WHO (2001) as legitimate and effective.

Empowerment

A key feature of CD is the empowerment of community members through education and skills development (Naidoo & Wills, 2009). Empowerment is defined as the process by which people gain greater control over decisions and actions affecting their health (Nutbeam, 1998). This, in turn, is embodied in the ‘Ottawa Charter for Health Promotion’ in which the WHO (1986) described health promotion as that process enabling people to gain control and improve their health.

Health promotion follows the 1946 definition of health as a state of complete physical, mental and social wellbeing and not simply the absence of disease or infirmity (Naidoo & Wills, 2009). Unfortunately, Western medicine still operates within a medical model using a narrow view of health conceptualized around disease prevention, thus seeing health as a negative term by what it is not and not by what it is (Naidoo & Wills, 2009).

Empowerment is such a cardinal principal that its absence signals that an intervention does not fall within the rubric of health promotion (WHO, 2001). The approach is based on a ‘bottom-up’ strategy which helps people identify their own concerns and gain the skills and confidence to act upon them (Naidoo & Wills, 2009). However, for people to be empowered they need to recognize their powerlessness (Naidoo & Wills, 2009). Furthermore, empowerment cannot be bestowed by others but must be gained by those who seek it (Laverack, 2006).

Planning

According to Laverack and Labonte (2000), the involvement of participants in the early planning

stages helped resolve conflicts that may have arisen later during implementation and evaluation. Planning is described under ‘sustainability: further key approaches’.

Stakeholder engagement

The stakeholders were the organizations that had interest in the programme. These included the local councils, the association, the *Kunsill Malti għall-iSport* (Malta Sports Council, KMS), and the state hospital’s diabetes department. The media, volunteers and sponsors also played important roles.

Action: implementation of resources and partnership

With the assistance of the association, cases from all walks of life were chosen to reduce chances of social exclusion. Through profiling, those with most inequalities were targeted.

A field-tested methodology for community empowerment involving workshops whereby participants independently self-assessed nine operational domains ranging from participation to programme management (Laverack & Labonte, 2000) was employed by the directorate’s health promoters. Empowerment was seen arising indirectly from the input of information that led to the enhancement of self-esteem (MacDonald, 1998).

When all meetings were over, the empowered community subgroups agreed to seek sponsorship for publishing a set of illustrated leaflets. This served as a valuable resource to further educate the community on the importance of PA.

Through the development of user-friendly guidelines, people with diabetes received important health messages regarding safe daily activities such as walking and gardening, commonly known as health-enhancing PA or HEPA (WHO, 2007). These activities only needed basic skills, did not require gym enrolments and could be done by practically everyone irrespective of the social class or disability that they might have had. Health inequalities were therefore addressed. Furthermore, the leaflets included medical advice such as on how exercise-induced hypoglycaemia could be avoided if pre-exercise blood glucose was low.

People leading sedentary lifestyles were 1.5 times more likely to develop late-onset diabetes than active people (Colditz, 1999). Consciousness-raising is essential for community empowerment process (Naidoo & Wills, 2009). When the members of the community became more aware of the relationship between sedentariness and diabetes, they made sure that their children practiced HEPA for diabetes prevention.

However, PA contributes more to health than just the benefits that pertain to diabetes. The guidelines therefore highlighted other benefits associated with PA such as reduced risks for heart disease, colon and breast cancer (WHO, 2007).

The community then held a press conference to launch the guidelines and to raise public awareness about their concerns to start holding regular activities with local councils. During the conference, community leaders also expressed their intentions to develop partnership with government entities, such as the directorate and KMS, by contributing towards the development of a sports and recreational strategy whereby people with diabetes, apart from being able to socially integrate with other people and safely participate in exercise, would benefit from educational programmes and regular checkups to reduce the risk of sight loss and other complications. Eventually, the community would gain more control over the decisions and resources that influenced their lives. This fitted into the description of community empowerment as building from the individual to the group to bring about social and policy changes (Laverack, 2007).

Partnership occupies the sixth step in Arnstein's 'eight-rung ladder' of citizen participation (Naidoo & Wills, 2009). At this level, planning and decision-making responsibilities were shared between citizens and power holders (Wilcox, 1998).

Community participation has become increasingly popular in health promotion as it is both effective and empowering (Naidoo & Wills, 2010). Partnership work usually aimed at change or adoption of new behaviour (ElAnsari, Phillips and Hammick, 2001). This was reflected when 50% of the community overcame the barriers of PA and started adopting active lifestyles.

However, Jordan, Dowswell, Harrison, Lilford, and Mort (1998) warned that uncontrolled participation in decision-making can increase inequalities by allowing those who were most able to register their demands to do so at the expense of the less articulate. This was not allowed to happen.

The ties that link people together within a community are called networks (Naidoo & Wills, 2009). Information and learning about the benefits of regular PA had to be shared across the whole community. Developing alliances was part of networking (Henderson et al., 2004). Partnership is a formal alliance of groups working together for a common goal (ElAnsari et al., 2001). Alternative terminologies for partnership include participation, collaboration, coalition and joint-working; all feature under 'participation and celebrations'.

Evaluation

In the current evidence-based practice, evaluation of PA interventions has become increasingly important (Gidlow, Johnston, Crone, & James, 2008). As PA was classified as one of the ten leading health indicators in 'Healthy People 2010', the need to evaluate any PA programme is greater than ever (U.S. Department of Health and Human Services [USDHHS], 2002).

The evaluating team consisted of experienced health promoters who had earlier conducted the profiling. These internal evaluators were familiar with the community members and had more opportunities for informal feedback than if external evaluators were to be contracted (ElAnsari et al., 2001).

Evaluation was based on what was intended to be achieved in the objectives. Furthermore, the course of action of the intervention was assessed through process evaluation consisting of empirical approaches (mainly observations), made by the health promoters. ElAnsari et al. (2001) stressed on the importance of formative evaluation that covered process in time for budget decision-making. Questions that helped keep the intervention on track included (USDHHS, 2002):

- What are we doing?
- What is not working well and why?

The 'achieving better community development model' which provides a framework for measuring participation and empowerment (Naidoo & Wills, 2009), was endorsed by the directorate. The framework emphasized that evaluation is key to empowerment rather than something to keep funders happy at the end of the project (Henderson et al., 2004).

An appropriate evaluation methodology for community empowerment should account for different subjective experiences to be accessed (Laverack & Labonte, 2000). Measurement of self-efficacy involved questions related to the magnitude such as, were you capable of sustaining your walking activity(?), and strength for example, people rated subjectively their likelihood of maintaining walking everyday to work (Biddle & Mutrie, 2008).

Stewart (2010) advised to use existing questionnaires that have been validated. Self-administered questions from the International Physical Activity Questionnaire, which comprises structured questions about the time spent active in the past week (Hagströmer, Oja, & Sjöström, 2006), were included in the surveys.

People move through a series of stages when adopting new behaviour (ElAnsari et al., 2001). Marcus and Owen (1992) developed a stage measurement question for Prochaska and DiClemente's 'trans-theoretical model' (TTM) of change. Levels of PA were assessed on an 11-point-scale ranging from pre-contemplation (I currently do not exercise and have no intention to start for the next

six months), to maintenance (I currently exercise regularly and have done so for the past six months) (Renger, Steinfeld, & Lazarus, 2002).

Cost-effectiveness was economically evaluated using questions based on a report by Cochrane, Davey, and Matthes-Edwards (2005). A typical question was: in the past week, indicate what and what dosage of anti-diabetic medicines you have taken. Cost-effectiveness is further tackled under 'sustainability: further key approaches'.

Mixed methods research was used by applying questions based on: how many diabetes people refrained from doing regular PA(?); and what were the barriers holding patients from leading healthy, active lifestyles(?). Although some researchers reported that quantitative methods alone were insufficient for the evaluation of collaborative community initiatives (Gillies, 1998), others warned that mixed methods may produce contradictory results (ElAnsari et al., 2001). Nevertheless, pluralistic evaluation accumulated evidence from a variety of different sources (Billings, 2000).

Naidoo and Wills (2009) advised that evaluation was more worthwhile if it made a difference. The immediate effects through impact evaluation were investigated by conducting all the above types of questions a month after the dissemination of the guidelines. The analyses of the questionnaires were then compared with the replies of the initial survey that was used for identifying health needs. Respondents were therefore asked about their permanent resident status in order to capture the same subjects every time.

Outcome evaluation assesses long-term effects such as changes in lifestyle patterns (Naidoo & Wills, 2009). A follow-up survey pack was mail-shot to the same community members a year following the impact evaluation. It contained an informative letter on the benefits of PA that served to refresh their memories followed by the same questions previously asked in the impact evaluation questionnaires. A self-addressed, postage-paid envelope was also part of the pack. A systematic review on PA interventions revealed that sustainability was more likely for walking or other basic activities that required no facilities, and that follow-up contact enhanced participation (Hillsdon & Thorogood, 1996).

As advised by Stewart (2010), in order to secure accurate answers from the community members confidentiality was stressed in the information letter and they were reassured that future medical care would not be affected by their responses. They were also informed that their questionnaire replies, observation data and outpatient HbA1c monitoring were being used for evaluation purposes, and that they had the right to object.

To further improve the response rate, gift vouchers were raffled among quick responders. Gifts that encouraged PA such as pedometers and gym membership discounts complemented the effectiveness of this intervention. It was demonstrated that mail surveys offering gift incentives resulted in higher response rates than controls (Gajraj, Faria, & Dickinson, 1990). Gifts and discounts were donated by sponsors.

Although the evaluation was based on what was expected to be achieved in the objectives, as the participants' experiences of capacity and power increased over time, some empowerment objectives changed, leading to a learning-in-action process (Laverack & Labonte, 2000). Therefore, the final questionnaire included further questions that probed into exercise, dance and sport to capture specific areas of PA.

Sustainability: Further Key Approaches

Being well-established through the continuous support of their association, the community, according to Laverack and Labonte (2000), was assumed to require one year before showing healthy changes that had reached some degree of sustainability.

Funding

A plan for financial sustainability is a tool to help the initiative thrive over long-term (CTB, 2014c). The printing and dissemination of PA guidelines, and the questionnaire reply gift schemes were sponsored by private organizations. As suggested by Naidoo and Wills (2009), sponsorship was only acceptable when coming from enterprises compatible with health principles. The profiling exercise, workshops and evaluations were the three main processes that required funding from the government-dependent directorate.

Participation and celebrations

The local councils together with the association gradually took over the work of the health promoters and supported the participants to remain active by regularly organizing recreational activities like family outings, dance classes and fun runs. MacDonald (1998) recognized that empowerment required advocacy. The collaborative work between the local councils, the association and the community reflected the maintenance stage of the TTM. Active effort had to be sustained for adopted change to continue (ElAnsari et al., 2001), thus avoiding relapse into sedentary lifestyle. The health promoter was basically a facilitator whose role was to act as a catalyst by

getting things going and then withdrawing from the community (Naidoo & Wills, 2009).

The healthy setting reached its peak when the mobilization of community leaders to champion the necessary actions and the creation of mechanisms for participatory action were in full swing (WHO, 2003). However, some researchers argued that the high expectations often expressed within the settings' literature were not always realistic (Whitelaw et al., 2001).

With the help of volunteers, local councils organized celebrations of goal accomplishments. Celebrations are an important aspect of any community initiative (CTB, 2014d). They sustained the CD because people felt appreciated and motivated to carry on with their healthy lifestyles (CTB, 2014e).

Collaboration with the media served to acknowledge the volunteers and whoever gave assistance. The leaders of the community subgroups that showed progress were also honoured. A volunteer once felt that anything that gets published was a major accomplishment (Eisinger & Senturia, 2001). The launch of the diabetes PA guidelines could be seen as a successful achievement. Publicity also gave a message that the community organization was opened for anyone wanting to help (CTB, 2014f).

Much has been said about community joint-working with the tripartite organization composed of representatives from various local councils, the association and the KMS; the directorate now keeping a low profile. Intersectoral collaboration was effective when all the 'actors' involved were truly integrated to work together with the community (WHO, 2003). Health promotion demands coordinated action by all concerned to mediate between different interests for the pursuit of health (WHO, 1986). Furthermore, WHO (2002) stated that community participation was essential if interventions aimed at promoting health and environmental protection were to be widely owned and sustainable.

It was previously explained how partnership with the directorate and KMS could have brought certain policy changes. Another way of ensuring the continuation for change was by collaborating with local authorities that had extensive responsibilities for education and social services amongst other functions (Hunter, 1995). Coalitions and voluntary alliances between communities and organizations assisted the communities in addressing their issues (Laverack & Labonte, 2000).

Malta is subdivided into 68 local councils which form the basis of local government (Wikipedia, 2014). Due to the high prevalence of diabetes, the community was therefore divided into 68 subgroups. According to Laverack and Labonte (2000), the need to split the community into subgroups allowed for

better programme management and control by focusing on smaller numbers. Hunter (1995) concluded that local government should become the lead agency for the health of local communities. The withdrawing of the health promoters followed by the gradual control of the local councils over community subgroups have been acknowledged.

Cost-effectiveness

It was not enough that the intervention was effective; it had to be cost-effective (Naidoo & Wills, 2010). Cost-effectiveness is necessary for sustainability. The metformin studies indicated how the health of the community that was empowered to adopt active lifestyles could be sustainable. The WHO (2007) declared that regular moderate-intensity PA can be very cost-effective in improving and maintaining health.

Environment

There was a time when professionals used to think that sustainability simply meant that there were sufficient finance and human resources to continue the project, and not that it contributed to environmental protection (Henderson et al., 2004). This approach is changing. The policy, 'a better quality of life: a strategy for sustainable development for the UK', had laid emphasis on environmental issues including air pollution which affect health (Henderson et al., 2004).

When the empowered community became less dependent on car-use and started doing errands and light shopping on foot, it was embracing a broader approach towards sustainability by contributing to cleaner air. A report by Carley, Kirk, and McIntosh (2001) explained how carbon dioxide traffic emissions were causing climate change. The same report stated that every development should promote sustainable environmental friendly transport modes such as walking and cycling. To emphasize the contingent relationship between mankind and the environment, MacDonald (1998) declared that the individual's capacity to prevent atmospheric pollution was much more restricted than the freedom of choice in matters of exercise and diet.

Institutionalization

A plan of institutionalization steps ensured better chances that the CD remained in existence through changes in leadership or funding, or when other events affected it (CTB, 2014f). Steps such as goal identification, process measures and publicity have been duly covered.

Structuring was important for project sustainability (CTB, 2014f). Even after they were empowered to stay healthy, structure was still required. Besides offering support, the association had to remain a ‘watchdog’ over the local councils and keep reminding them to organize recreational activities involving PA for all the family to keep the promotion of active lifestyles in operation. ‘1000 cities 1000 lives’ was a global initiative to promote PA in urban settings which provided a platform to bring communities together towards a common healthy goal – that of enjoying PA, music and being outdoors (WHO, 2010). It has been explained how local councils had taken the lead in organizing such events.

If local councils’ budget was insufficient for organizing PAs, an agreement with the KMS meant that it would partially fund the councils’ activities. The association had to report to the directorate any irregularities. These reports, together with data of HbA1c received from the outpatients’ department, assisted the directorate in the evaluation processes. Therefore, the directorate still had to remain the topmost authority of the structure even when it was not playing an active role.

Another institutionalization step involved seeing that the workload was fairly distributed and whether more volunteers and professionals were required (CTB, 2014f).

Contingency planning

Effective planning required one to anticipate what obstacles may have occurred (CTB, 2014f). It has just been remarked how the KMS had the potential to intervene in order to fund the events.

Medical representatives may not welcome an ongoing community activity that decreases the dependence on anti-diabetic medications. In case they started advertising their medicinal products as convenient commodities, the directorate was prepared to launch advertisements to counteract their actions. This required extra funding which led to the final step of institutionalization – sufficient budget (CTB, 2014f). A significant proportion of funds were therefore reserved for any needs to advertise the importance of exercise for diabetes therapy and to recruit more workers.

Limitations and Clarifications

Although all the mentioned organizations exist, there was no involvement of any stakeholder. The scenario was imaginary. To make up for this weakness, in-depth literature and extensive referencing was used throughout the text to strengthen the setting of the diabetes CD intervention. However, in some in-text citations, especially when phrases that were assumed to be automatically understood like, ‘as advised by’, ‘according to’ and ‘as suggested by’ were not included in the text, the reader may get offset from the fictitious line of the CD progress. Figure 1 should help readers

focus on this model.

Although the evaluation process formed an integral part of the scenario, it was not included in the flow chart. This meant that the reader could more easily follow the transition stages of the community.

In order to present a comprehensive model of applied CD, some personal additions based on either facts, or principles of good conduct, or on general knowledge of what is already known on CD were unavoidable in order to fill up those gaps and continue the progress of the hypothesised community scenario when literature was lacking. Although the article puts forward this model for consideration, the past tense was still the preferred verb form in most parts of the text.

Due to the possibility of the article becoming excessively long, other possibilities were not explored. The following examples could have been included: a) The importance of healthy eating, so crucial for people with diabetes, was excluded. b) Community subgroups can work together by for example creating leagues for team sports. In this article, the subgroups of different localities did not interact. c) At least 30 minutes of daily PA should be encouraged at school (OMHLC, 2012). Although schools are ideal settings where children and adolescents can be reached and form integral parts of the community, they were not exploited.

Conclusion and Implications

Two fundamental principles, empowerment and participation played key roles for the hypothetical success and sustainability of this intervention. Evidently CD, with its ‘bottom-up’ approach represents a challenge to the medical model.

Although the intervention was fictitious, the implications that this model could have on the future diabetes healthcare in Malta and other countries are several. Literature review supporting CD theory showed that albeit time-consuming, if properly conducted, it should achieve the desired visible results (community becoming more physically active and less dependent on anti-diabetic medications and car-use) and at the same time being ethical, sustainable, cost-effective and environmental friendly. It was also shown how the community that wanted to adopt a healthy lifestyle could eventually bring about certain policy changes even though government policy change was originally not the objective. When health is created and practiced regularly the community becomes a truly healthy setting (WHO, 1986).

As observed by Naidoo and Wills (2009), the author acknowledges that CD in healthcare remained marginalized and hopes that this article would serve as a model to stimulate interest amongst authorities to use this approach for diabetes management. Admittedly, the literature review was not based on a usual systematic process but the fact that it was

applied to a possible scenario should be fairly intriguing to policymakers and health professionals.

In spite of the fact that the absence of evidence of effectiveness should not be mistaken for the absence of effect (Crawford et al., 2002), evidence-based healthcare remains widely accepted as the ideal practice for patients to receive the best intervention. At first this article may seem to lack the necessary evidence but one should not be reluctant to consider applying CD for diabetes management even beyond pilot project level, because the hypothesized effects of this model were based on the non-debatable effectiveness of regular PA as an alternative medicine, and on the two researched and recommended guiding principles that form the basis of CD: empowerment and participation. These would not be recommended by the WHO if they were not effective.

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Competing Interests

There was no conflict of interest to declare.

References

- Biddle, S. J. H., & Mutrie, N. (2008). *Psychology of physical activity: Determinants, well-being and interventions* (2nd ed.). Oxford: Routledge.
- Billings, J. R. (2000). Community development: A critical review of approaches to evaluation. *Journal of Advanced Nursing*, 31, 472-480.
- Brazeau, A-S., Rabasa-Lhoret, R., Strychar, I., & Mircescu, H. (2008). Barriers to physical activity among patients with type 1 diabetes. *Diabetes Care*, 31, 2108-2109.
- Campbell, R., Pound, P., Pope, C., Britten, N., Pill, R., Morgan, M., & Donovan, J. (2003). Evaluating meta-ethnography: A synthesis of qualitative research on lay experiences of diabetes and diabetes care. *Social Science and Medicine*, 56, 671-684.
- Carley, M., Kirk, K., & McIntosh, S. (2001). *Retailing, sustainability and neighbourhood regeneration*. York: Joseph Rowntree.
- Cochrane, T., Davey, R. C., & Matthes-Edwards, S. M. (2005). *Health technology assessment: Randomised controlled trial of the cost-effectiveness of water-based therapy for lower limb osteoarthritis*. Suffolk: Gray.
- Colditz, G. A. (1999). Economic costs of obesity and inactivity. *Medicine and Science in Sports and Exercise*, 31, S663-S667.
- Community Tool Box. (2014a). *Conducting needs assessment surveys*. Retrieved from http://ctb.ku.edu/en/tablecontents/sub_section_main_1042.aspx
- Community Tool Box. (2014b). *Developing and increasing access to health and community services*. Retrieved from http://ctb.ku.edu/en/tablecontents/sub_section_main_1243.aspx
- Community Tool Box. (2014c). *Developing a plan for financial sustainability*. Retrieved from http://ctb.ku.edu/en/tablecontents/sub_section_main_1297.aspx
- Community Tool Box. (2014d). *Arranging celebrations*. Retrieved from http://ctb.ku.edu/en/tablecontents/sub_section_main_1288.aspx
- Community Tool Box. (2014e). *Honouring colleagues*. Retrieved from http://ctb.ku.edu/en/tablecontents/sub_section_main_1293.aspx
- Community Tool Box. (2014f). *Strategies for the long-term institutionalization of an initiative: An overview*. Retrieved from http://ctb.ku.edu/en/tablecontents/sub_section_main_1329.aspx
- Crawford, M. J., Rutter, D., Manley, C., Weaver, T., Bhui, K., Fulop, N., & Tyrer, P. (2002). Systematic review of involving patients in the planning and development of health care. *British Medical Journal*, 325, 1263-1265.
- Dubé, M. C., Valois, P., Prud'homme, D., Weisnagel, S. J., & Lavoie, C. (2006). Physical activity barriers in diabetes: Development and validation of a new scale. *Diabetes Research and Clinical Practice*, 72, 20-27.
- Eisinger, A., & Senturia, K. (2001). Doing community-driven research: A description of Seattle Partners for healthy communities. *Journal of Urban Health*, 78, 519-534.
- ElAnsari, W., Phillips, C. J., & Hammick, M. (2001). Collaboration and partnerships: Developing the evidence base. *Health and Social Care in the Community*, 9, 215-227.
- Ewles, L., & Simmet, I. (1999). *Promoting health: A practical guide* (4th ed.). London: Baillière Tindall.
- Gajraj, A. M., Faria, A. J., & Dickinson, J. R. (1990). A comparison of the effect of promised and provided lotteries, monetary and gift incentives on mail survey response rate, speed and cost. *Journal of Market Research Society*, 32, 141-162.
- Gidlow, C., Johnston, L. H., Crone, D., & James, D. V. B. (2008). State of the art reviews: Methods of evaluation: Issues and implications for physical activity referral schemes. *American Journal of Lifestyle Medicine*, 2, 46-50.
- Gillies, P. (1998). Effectiveness of alliances and partnerships for health promotion. *Health Promotion International*, 13, 99-120.
- Green, J., & Tones, K. (2010). *Health promotion: Planning and strategies* (2nd ed.). London: Sage.
- Hagströmer, M., Oja, P., & Sjörström, M. (2006). The International Physical Activity Questionnaire (IPAQ): A study of concurrent and construct validity. *Public Health Nutrition*, 9, 755-762.

- Henderson, P., Summer, S., & Raj, T. (2004). *Developing healthier communities*. London: Health Development.
- Hillsdon, M., & Thorogood, M. (1996). A systematic review of physical activity promotion strategies. *British Journal of Sports Medicine*, 30, 84-89.
- Hooper, J., & Longworth, P. (2002). *Health needs assessment workbook*. London: Health Development.
- Hunter, D. J. (1995). The case for closer cooperation between local authorities and the NHS. *British Medical Journal*, 310, 1587-1589.
- Jack, K., & Holt, M. (2008). Community profiling as part of a health needs assessment. *Nursing Standard*, 22, 51-56.
- Jordan, J., Dowswell, T., Harrison, S., Lilford, R. J., & Mort, M. (1998). Health needs assessment: Whose priorities? Listening to users and the public. *British Medical Journal*, 316, 1668-1670.
- 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. *New England Journal of Medicine*, 346, 393-403.
- Laverack, G. (2006). Improving health outcomes through community empowerment: A review of the literature. *Journal of Health Population and Nutrition*, 24, 113-120.
- Laverack, G. (2007). *Health promotion practice: Building empowered communities*. Berkshire: Open University.
- Laverack, G., & Labonte, R. (2000). A planning framework for community empowerment goals within health promotion. *Health Policy and Planning*, 15, 255-262.
- MacDonald, T. H. (1998). *Rethinking health promotion: A global approach*. New York, NY: Routledge.
- Maltese Diabetes Association. (2014). *Maltese Diabetes Association*. Retrieved from <http://www.diabetesmalta.org/index.html>
- Marcus, B. H., & Owen, N. (1992). Motivational readiness, self-efficacy and decision-making for exercise. *Journal of Applied Social Psychology*, 22, 3-16.
- Murray, S. A., Tapson, J., Turnbull, L., McCallum, J., & Little, A. (1994). Listening to local voices: Adopting rapid appraisal to assess health and social needs in general practice. *British Medical Journal*, 308, 698-700.
- Naidoo, J., & Wills, J. (2009). *Foundations for health promotion (public health and health promotion practice)* (3rd ed.). London: Baillière Tindall.
- Naidoo, J., & Wills, J. (2010). *Developing practice for public health and health promotion* (3rd ed.). London: Baillière Tindall.
- Norheim, L. (1999). *Community development for health: A resource guide for health workers*. Lancaster: Lancaster University.
- Nutbeam, D. (1998). Health promotion glossary. *Health Promotion International*, 13, 349-364.
- Ontario Ministry of Health and Long-term Care. (2012). *Diabetes: Strategies for prevention*. Retrieved from <http://www.health.gov.on.ca/en/common/ministry/publications/reports/diabetes/diabetes.aspx>
- Pedersen, B. K., & Saltin, B. (2006). Evidence for prescribing exercise as therapy in chronic disease. *Scandinavian Journal of Medicine and Science in Sports*, 16, S3-S63.
- Renger, R., Steinfeld, V., & Lazarus, S. (2002). Assessing the effectiveness of a community-based media campaign targeting physical inactivity. *Family and Community Health*, 25, 18-30.
- Rocchiccioli, J. T., O'Donoghue, C. R., & Buttigieg, S. (2005). Diabetes in Malta: Current findings and future trends. *Malta Medical Journal*, 17, 16-19.
- Simmons, D., Fleming, C., Voyle, J., Fou, F., Feo, S., & Gatland, B. (1998). A pilot urban church-based programme to reduce risk factors for diabetes among Western Samoans in New Zealand. *Diabetic Medicine*, 15, 136-142.
- Skovlund, S. E., & Peyrot, M. (2005). The diabetes attitudes, wishes, and needs (DAWN) program: A new approach to improving outcomes of diabetes care. *Diabetes Spectrum*, 18, 136-142.
- Stewart, A. (2010). *Basic statistics and epidemiology: A practical guide* (3rd ed.). Oxford: Radcliffe.
- Thomas, N., Alder, E., & Leese, G. P. (2004). Barriers to physical activity in patients with diabetes. *Postgraduate Medical Journal*, 80, 287-291.
- U.S. Department of Health and Human Services. (2002). *Physical activity evaluation handbook*. Atlanta, GA: USDHHS.
- Whitelaw, S., Baxendale, A., Bryce, C., Machardy, L., Young, I., & Witney, E. (2001). 'Settings' based health promotion: A review. *Health Promotion International*, 16, 339-353.
- Wikipedia. (2014). *Local councils of Malta*. Retrieved from http://en.wikipedia.org/wiki/Local_councils_of_Malta
- Wilcox, D. (1998). *The guide to development trusts and partnerships*. London: Development Trusts.
- Wilkinson, J. R., & Murray, S. A. (1998). Health needs assessment - assessment in primary care: Practical issues and possible approaches. *British Medical Journal*, 316, 1524-1528.
- World Health Organization. (1986). *Ottawa Charter for health promotion*. Geneva: WHO.
- World Health Organization. (2001). *Evaluation in health promotion: Principles and perspectives*. Copenhagen: WHO.
- World Health Organization. (2002). *Community participation in local health and sustainable development: Approaches and techniques*. Copenhagen: WHO.
- World Health Organization. (2003). *The settings approach: A guiding framework for HECA*. Retrieved from http://www.who.int/heca/alliancebuilding/heca2wg_draftsettings_180303.PDF
- World Health Organization. (2007). *10 things you need to know about physical activity*. Copenhagen: WHO.
- World Health Organization. (2010). *1000 cities 1000 lives: Urban health matters*. Kobe: WHO
- Young, J. C. (1995). Exercise prescription for individuals with metabolic disorders: Practical considerations. *Sports Medicine*, 19: 43-54.