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Inter-professional Primary Care Practices Addressing Diabetes Prevention and Management*

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Imagine a partnership of university and community which addresses the needs of the community to keep its citizens healthy as long as possible. Through a planning exercise to address the community's needs in primary health care and health promotion, the university has developed key strategic directions to help support the needs of the community it serves. This inter-professional education and practice initiative serve to change health care delivery through the education of practitioners who, by working in teams with the community, will actively improve health and health outcomes. With specific interest in the explosion of diabetes within the surrounding community, teams of students and faculty are working to improve high risk groups for diabetes by involvement in health education, physical fitness and coaching activities. Through positioning of inter-professional teams in our community engagement center, the prevention and management of this key health issue is addressed. This center is located in a high poverty and immigrant area, with a high predisposition for diabetes. Academic and community partnerships for action are highlighted in this paper.

Keywords: interprofessional, diabetes, primary care, vulnerable populations

In the second decade of the 21st century, we are faced with the increased health burden resulting from overweight/obesity, the Type 2 diabetes epidemic. This paper will address one university-community partnership which attempts to bring a multi-pronged and integrative strategy involving inter-professional practice and research initiatives to enact transformative change in a community in Toronto, Ontario Canada at high risk for diabetes. It is the position of the author that the issue requires immediate coordinated actions at all levels of the health and educational system to ensure sustainable change.

Obesity/Diabetes Epidemic

In the past two decades, there has been a dramatic increase in the obesity rates in North America. Obesity trends in adults in the US have gradually increased from only 14% in 1990 to a majority in the 15%-25% obesity range in 1999. Today, the statistics of posted rates demonstrate 15%-30% of Americans are overweight, with many key states in very high ranges above 30% (American Diabetes Association, 2011). Slightly lower, but yet similar statistical trends are available for Canada, with 2007 rates in the Eastern provinces and Alberta demonstrating higher than 20% obesity in the population—a range of 13%-17% of the total provincial population (Public Health Agency of Canada, 2009).

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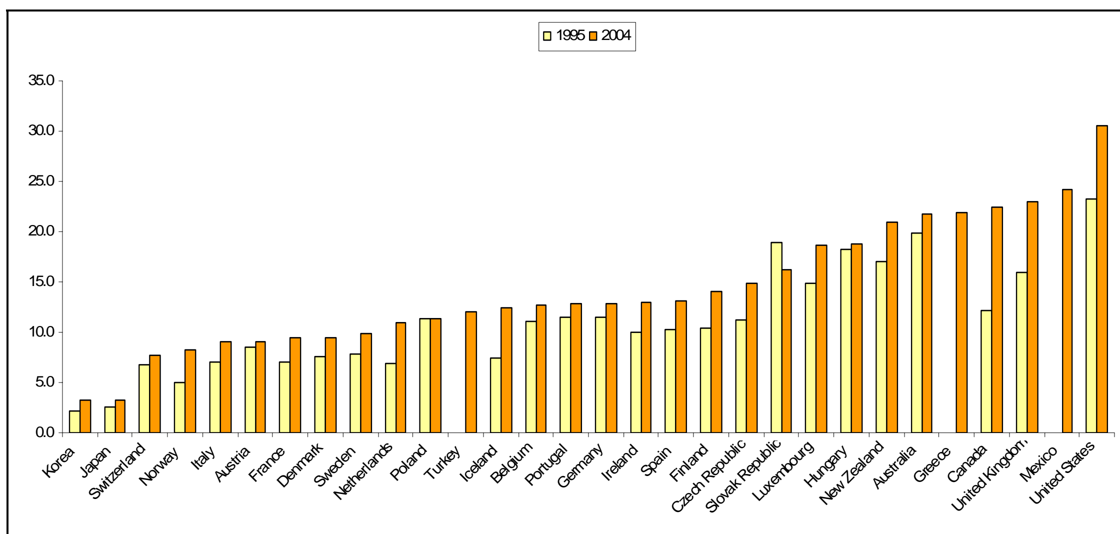

Figure 1. Obesity trends worldwide.

The data of OECD (Organization for Economic Co-operation and Development) reflect a disturbing trend of increasing obesity levels across the globe, with Canada and the US clear front runners (see Figure 1). This trend is increasingly distressing, as it recognizes the toll taken on health systems of the burden of chronic disease. With obesity, the risk of development of Type 2 diabetes is high, a condition known to contribute its impact on the health care system. The Canadian health care system cannot withstand the predicted increase over the next decade and cannot sustain the present and future costs associated with the burden of secondary conditions resulting from diabetes trends. It is expected that diabetes will rise to 71.9% in Canada by 2016 (Ohinmaa, Jacobs, Simpson, & Johnson, 2004), and the costs of diabetes to Canadians includes $ 1,000 to $ 15,000 per year in personal medical costs, 41,500 deaths per year from associated chronic conditions, such as heart disease and stroke. Overall, Canadian lives are shortened five to 15 years due to diabetes prevalence (Canadian Diabetes Association, 2009).

As indicated, Type 2 diabetes is predominantly the result of overweight or obesity in our adult population. However, the prediction is that our children's tendencies towards unhealthy eating and reduced physical activity will put them at higher risk of developing early onset diabetes, with a suggestion that their life expectancies will be significantly less than their parents and grandparents.

What are the contributing factors to the development of diabetes? Dennis Raphael is a renowned researcher in the area of social determinants of health in Canada and has written extensively on the subject. Social determinants of health are defined as the economic and social conditions that influence the health of individuals, communities and jurisdictions as a whole (Raphael, 2008). They are about the quantity and quality of a variety of resources that a society makes available to its members. Mikkonen and Raphael (2010) identified the following determinants of health as they pertain to Canada: (1) gender; (2) housing; (3) income and income distribution; (4) race; (5) social exclusion; (6) social safety net; (7) unemployment; (8) Aboriginal status; (9) disability; (10) early life; (11) education; (12) employment and working conditions; (13) food security; and (14) health services.

As an example of the effect of poverty on morbidity and mortality, Wilkins (2007) demonstrated the increase in female and male mortality rates since the 1970s in rich vs. poor urban neighborhoods. Essentially, it is the lower the income, the higher likelihood for development of illness and eventual mortality. This is a worldwide phenomenon, which has potential for a shift in public policy to address inequities in living

conditions, thus, resulting in less impact on the health care system overall. Addressing the social determinants of health can affect the health care system burden.

In Ontario, the impact of diabetes can be related to the following factors: aging population, increasing prevalence of childhood and adult obesity, aboriginal population growth, increasing physical inactivity, increasing immigration from high-risk populations and other socioeconomic and environmental factors. Glazier, Booth, Gozdyra, Creatore, and Tynan (2007) mapped the social determinants of poverty (United Way of Greater Toronto, 2004), immigrant populations (Charron, 2009) and crime with the incidence of diabetes in the city of Toronto (see Figures 2-4).

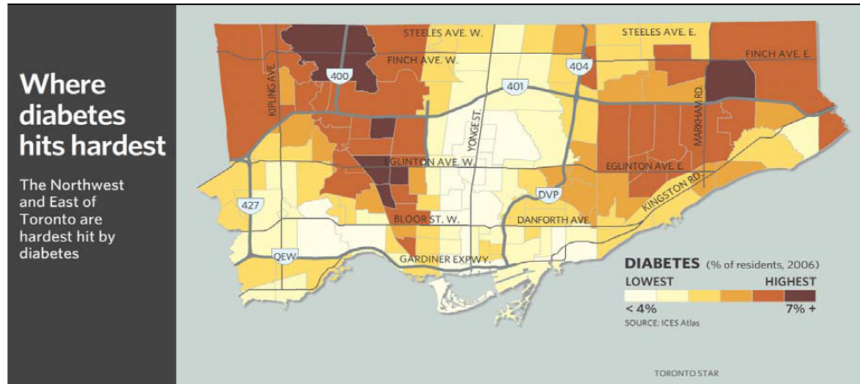

Figure 2. Diabetes prevalence in Toronto.

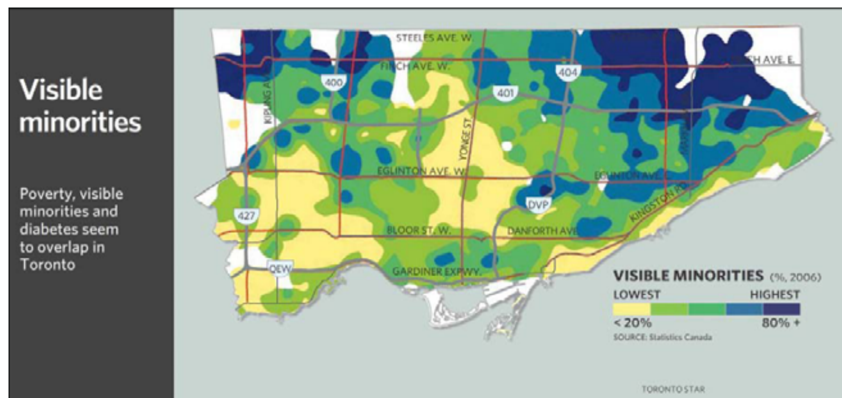

Figure 3. Visible minorities in Toronto.

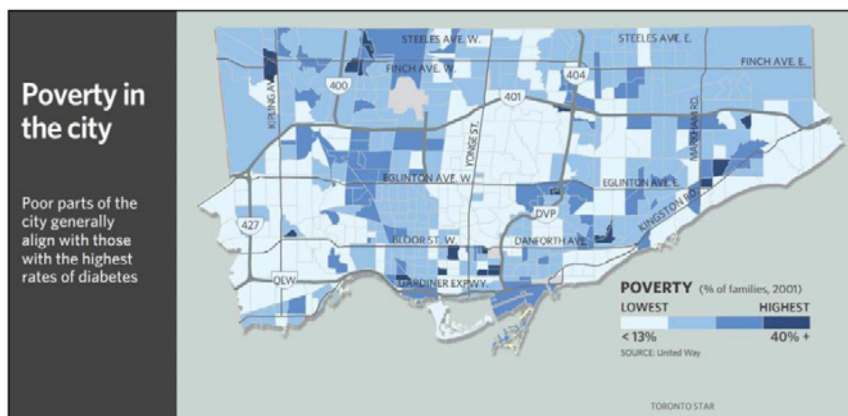

Figure 4. Prevalence of poverty in Toronto.

These city maps clearly outline the predominance of diabetes in the same neighborhoods as the highest immigrant growth, highest density housing, lowest income areas and lowest green recreational space but highest crime. The correlations of these factors with the neighborhoods were highly significant. Toronto and the surrounding area have the most rapid growth in Canada from new immigrants. Since 2000, 80% of immigrants to Canada were from groups considered to be at high risk for diabetes (Glazier et al., 2007).

Jane-Finch Community

The Jane-Finch area is culturally and linguistically diverse. Its resident groups and community leaders and workers are organized, proud and active. Despite of these assets, the area is still challenged by a relative lack of access to vital social services and infrastructure. Its high immigrant population has made it a visible high risk group for the development of diabetes. Ontario is made up of regional health units called LHIN (local health integration networks). The central LHIN have the highest prevalence of diabetes and pre-diabetes in the province.

Jane-Finch has a prevalence of diabetes double that of the average in the CLHIN (Central Local Health Integration Network) as a whole and almost triple that of Ontario. The CLHIN SNAGA (Health Service Needs Assessment and Gap Analysis) (2008) noted a correlation between diabetes prevalence and social determinants of health (poverty and education) and high levels of ethnic populations susceptible to diabetes Type 2 and an aging population. As such, unique approaches and partnerships are needed in areas, such as Jane-Finch to prevent Type 2 diabetes and provide secondary prevention. In relation to social determinants of health as predictors of diabetes:

(1) The area in which the community is located has the highest proportion of low income families in the CLHIN (20.47%);

(2) The median income of the community is $ 44,000 compared to $ 76,000 for the CLHIN;

(3) Jane-Finch community has a higher prevalence of diabetes (12.6% to 14.9%) than Toronto (10.5%) and Ontario (4.86%);

(4) There are currently 15,551 diabetics in the community, which will increase to 18,197 by 2018 (a increase of 17%);

(5) Compared to the Ontario average, the CLHIN has a greater number of people who spent 30% or more of household income on shelter;

(6) Jane-Finch has a much higher proportion of individuals over the age of 20 who have not received a high school diploma (38.6%) and a lower rate of post-secondary graduates;

(7) The Jane-Finch corridor has the highest percentage of lone parent families (40.1% to 51.0% of all census families in 2006);

(8) Violent crime involving youth is particularly prevalent in the Jane-Finch community;

(9) There are a greater proportion of newer immigrants at Jane-Finch (13.3%) compared to the city of Toronto (10.8%) (SNAGA, 2008, Website, http://www.centrallhin.on.ca).

Community Engagement

Despite of considerable commitment from both the community and the university, there remains a very real disconnect. Fences lined parts of the border between the two neighborhoods and were a visual reminder of the very real divide between the university and its neighbors to the west. The university has enjoyed a long

history of community partnerships with agencies and institutions in this neighborhood.

As a university intensely committed to issues of social justice, York University experimented with a new structure to better connect researchers, teachers and students with the neighboring local community. The York University—TD CEC (Community Engagement Centre), established in 2008, is a teaching, research and resource centre that promotes accessibility and social justice by fostering meaningful and transformative partnerships between the local community and the university. It is located off campus in a shopping mall in York's neighboring Jane-Finch community.

The CEC is an innovative strategy designed to support community-engaged scholarship and experiential learning by building and sustaining relationships that frame mutually beneficial partnerships. This centre is a physical presence in a vibrant area of the community and provides an accessible and welcoming interface. The main goals of the CEC are to: (1) enrich the educational experience of our students through experiential education and community involvement; (2) promote a sense of shared responsibility for our communities in our students, faculty and staff while simultaneously working to ensure our community partners see the university as a community ally with mutual interests and investments; (3) engage in programmatic activity and outreach that will reduce/eliminate barriers to post-secondary education; (4) encourage collaborative research partnerships that address community needs and issues and lead to social change; and (5) provide fertile ground for new collaborations. The York University—TD CEC located in Jane-Finch has a mandate to mobilize both York and community resources in service of mutual goals (York—TD CEC, 2008). The collaboration between the new community health services and the CEC provides opportunities for students and faculty to support the community in areas of health promotion, education programs, legal support services and community-based research projects. The integration of primary health care services coordinated with health promotion, preventative education and aligned with the provision of other vital services effectively establishes a central service hub in the community. It is this mutual support and coordination that is unique to a partnership between the university's CEC and the Jane-Finch community.

Inter-professional Education

The Ontario government's commitment to improving the health status of its citizens has led to a significant investment in promotion and support of inter-professional education. IPE (Inter-professional education) occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes (CIHC (Canadian Inter-professional Health Collaborative), 2008). It is a necessary step in preparing a "collaborative practice-ready" health workforce that is better prepared to respond to local health needs. A collaborative practice-ready health worker is someone who has learned how to work in an inter-professional team and is competent to do so. Collaborative practice strengthens health systems and improves health outcomes (WHO (World Health Organization), 2010).

Integrated health and education policies can promote effective inter-professional education and collaborative practice through a range of mechanisms:

(1) Supportive management practices;

(2) Identifying and supporting champions;

(3) Resolve to change the culture and attitudes of health workers;

(4) Willingness to update, renew and revise existing curricula;

(5) Appropriate legislation that eliminates barriers to collaborative practice (CIHC, 2010).

In addressing the needs of the Jane-Finch community in relation to diabetes prevention and management, the inter-professional approach was chosen as making the most effective change. A multi-faceted, multi-professional approach was deemed to have a more sustainable effect in behavior, hence, the delivery of the following interventions, in both practice and research.

Pre-PAID (Physical Activity Intervention Delivery) Project

The Pre-diabetes prevention and PAID (Physical Activity Intervention Delivery) Program is a joint program led by researchers in Kinesiology (Rowan, Riddell, Kuk, Ardern, Ritvo, & Jamnik, 2010) with support from the Ontario government and Trillium foundation, which addresses community-based screening for diabetes using social networks to foster adherence and continued activity beyond the research project. The focus is on high risk ethnic populations with pre-diabetes using a two-step screening process. Using trained exercise physiologists to address physical activity programs for individuals screened as being at risk for diabetes, the project aims to build a sustainable community-based program to improve glycemic control for individuals.

Lived Experience of Diabetes

A team of inter-professional researchers addressed the reality of community residents on how living on low incomes affected their daily lives while managing their Type 2 diabetes (Pilkington, Daiski, Bryant, Raphael, Dinca-Panaitescu, & Lines, 2010). The challenges faced by the Jane-Finch residents relating to balancing of competing priorities for living on a limited income and managing their diabetes are well highlighted. Cultural dietary norms and the clash with customary diabetes nutritional management were clearly evident. The recommendations from this study indicated that physicians, nurses and other health professionals, as individuals and members of professional organizations, advocate for poverty reduction to prevent the continued rise in diabetes prevalence.

Inter-professional Ontario Disability Support Program

As proposed by Raphael (2007), poverty is an underlying determinant of diabetes especially in new immigrant populations. Therefore, a strategy aimed at enhancing financial well-being including support for families requiring financial subsidy. The ODSP (Ontario Disability Support Program) is designed for individuals with disabilities and who meet the financial criteria. The application process requires that a form be completed by a medical practitioner to confirm that the individual has a mental or physical disability. There are a large number of applications that are denied, but an appeal process is available. Because many of the Jane-Finch residents require subsidy such as ODSP, it was an ideal inter-professional project for students. The ODSP project was designed to provide a “wellness” approach at two intervention points, prior to the application being submitted for adjudication and/or during the appeal process. The project is in partnership with the BCCHC (Black Creek Community Health Centre), located centrally in the Jane-Finch neighborhood and in close proximity to York University. Through this project, the interdisciplinary team of clinical professionals at BCCHC provides clients and families with the opportunity to have their ODSP issue handled through a wellness team. Upon referral to a wellness team, if the individual chooses, he/she will interact with students from the Faculty of Health in nursing, the School of Social Work and students from the Faculties of Law and Education in a central hub hosted by the CEC. From their professional perspectives, they then provide integrated and comprehensive service to clients and families with a holistic and wellness approach.

Group and Individual Counseling Diabetes Education

The local community-based health center (BCCHC) is located in Jane-Finch and has a well established interdisciplinary team of practitioners offering diabetes education in individual and group formats. A diabetes education team provides an inter-professional approach to prevention and management and includes students in nursing, social work, community service and nutrition and exercise physiology working with practitioners, individuals and groups in Black Creek.

Nurse Practitioner Led Clinic

In support of comprehensive and integrated primary care initiatives, the Ontario government has supported the development of nurse practitioner led clinics. This led to the submission of a successful application between York University and Nurse Practitioners to support high risk youth and seniors in the Jane-Finch community. With this clinic student, placements will be provided for nursing, nurse practitioner, psychology, education, kinesiology and social work with a focus on comprehensive diabetes prevention and care.

Community Exercise Room

Within the local community health center (BCCHC), clients pre-screened for diabetes are encouraged to engage in an exercise program. The exercise room has been equipped with donated treadmills, weights, stability bicycles and other portable fitness requirements, and offered to the residents of the community. It is staffed by York university kinesiology students and exercise physiologists, and has been very well received by the residents.

Blackberry "Coaches"

In a study supported by RIM (research in motion), York University researchers led by Ritvo (Posadzki, 2010) have designed a personal coaching protocol using Blackberry phones for diabetic patients in the region. The smart-phone acts as a health coach to assist the study participants with Type 2 diabetes to better manage their health and for those at high risk to avoid the disease. Through having participants log their meals, their moods and exercise on the blackberry, information can be transmitted to health providers who can subsequently track the wellness plan for the client. This is emerging and innovative use of technology for an individualized and patient-centered approach to diabetes management.

Inter-professional Community Forums

In an effort to jointly address the issue of diabetes, and in the spirit of knowledge mobilization, the university and community are facilitating forums located within Jane-Finch inviting residents to hear about new knowledge and resources within their communities and participate in forming an "action plan" to mobilize further attention to the issue. A panel of diabetes educators, dieticians, nurses, educators from local schools, teachers and academic researchers was held in a Jane-Finch high school. With the support of the Canadian Diabetes Association, healthy food was made available, in addition to translators and information in many languages. Residents and families with an interest in diabetes were invited to attend and provide commentary and input to produce a community action plan. Three more forums are planned for 2011 in other high risk communities.

Conclusions

Given the growing concerns across North America about the rise of diabetes prevalence and the particular

focus on the wellness of our youth, multifaceted, integrative and inter-professional approaches and interventions seem essential. At York University's Faculty of Health, the goal of making sustainable change in the area of chronic disease prevention and management is about working with communities to make a meaningful and transformative change. "It takes a village". Universities can be knowledge generators, but unless partners are engaged in actualizing or mobilizing the knowledge, there will be no recognizable positive outcome. The projects discussed highlight the impact on diabetes that inter-professional student groups can have when working closely with communities in need. The potential to make a meaningful difference begins with an acknowledgement of the challenges and an integrated approach from many disciplines to address them. Professional educators and university researchers working closely with community partners, such as with the York CEC and BCCHC, can bring change through empowerment, leadership and role-modeling of and for students. The result will be a newly engaged work force and a community-centric health promotion focus on a developing epidemic.

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