

Knowledge, Motivation and Barriers to Diabetes Control in Adults in Jamaica

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ABSTRACT

In this descriptive study, individual structured interviews were conducted on a random sample of 35 men and 98 women from a population (n = 510) of clinic patients. Open questions sought to determine the extent of knowledge, motivation and barriers to lifestyle changes for control of diabetes mellitus (DM) in Jamaican adults. These were coded into themes and described. Other data were analysed using SPSS. Men (61.8 ± 14.8 years) were older than women (54.9 ± 13.7 years) and demonstrated less knowledge (p = 0.006). The respondents (71%) indicated the need for more education. Barriers to lifestyle changes and glycaemic control included a low education level (64%), inadequate knowledge (80%), lack of perceived risk (80.4%) and lack of self-monitoring (93%). Only 23% were controlled to HbA_{1c} # 6.5%. The patients' reference to the physicians as a primary source of information indicated the need for a collaborative team approach, and the incorporation of diabetes education as an indispensable service at this clinic.

Conocimientos, Motivación, y Obstáculos en Relación con el Control de la Diabetes de Adultos en Jamaica

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RESUMEN

En este estudio descriptivo, se realizaron entrevistas estructuradas individuales a una muestra aleatoria de 35 hombres y 98 mujeres de una población (n = 510) de pacientes clínicos. Las preguntas abiertas buscaban determinar la extensión de los conocimientos, la motivación, y los obstáculos a los cambios en el estilo de vida para el control de la diabetes mellitus (DM) en adultos jamaicanos. Estas fueron codificadas en forma de temas, y descritas. Otros datos fueron analizados usando el paquete estadístico SPSS. Los hombres (61.8 ± 14.8 años) fueron mayores que las mujeres (54.9 ± 13.7 años) y demostraron menos conocimientos (p = 0.006). Los respondientes (71%) indicaron la necesidad de más educación. Los obstáculos a los cambios en el estilo de vida y el control glicémico, incluyeron un bajo nivel educacional (64%), conocimientos inadecuados (80%), falta de percepción de riesgos (80.4%) y falta de auto-monitoreo (93%). Sólo el 23% se mantenían bajo un control de HbA_{1c} # 6.5%. La referencia de los pacientes a los médicos como fuente primaria de información indicó la necesidad de un enfoque colaborativo en equipo, y de la incorporación de la educación para la diabetes como un servicio indispensable en esta clínica.

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INTRODUCTION

The World Health Organization projects that the number of adults with diabetes mellitus (DM) in the Americas will double by 2025 (1). The crude prevalence rate of DM in the adult population in Jamaica is 13.4% (95% CI 11.5, 15.2) of

a total population of 2.5 million of mainly African descent (2).

Factors which contribute to poor control of diabetes mellitus in this population include cultural beliefs and lack of education (3, 4). Persons with DM generally have a poor knowledge of care and there is usually no consistency in the way information is delivered to them (5).

Although the prevalence of DM is high in Jamaica, and the level of control is unacceptable, few studies have been done to inform on factors influencing knowledge and positive lifestyle changes (6). This study was, therefore, designed to explore the Jamaican adult's knowledge of DM,

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motivational factors, and identify possible barriers to positive lifestyle changes and glycaemic control (7).

SUBJECTS AND METHODS

Following approval by the Faculty of Medical Sciences/ University Hospital of the West Indies Ethics Committee, a computerized random sample of 35 men and 98 women with DM was selected from a specialist clinic population of 510 patients (144 men, 366 women). The sample size, using the mean and standard deviation of HbA_{1c} (8) was determined according to Cochran (9). The estimated minimum sample size was 122 with a power of 80%. A *p*-value ≤ 0.05 was taken as significant.

An one-hour in depth interview of each participant was conducted using a pre-tested interview schedule. The instrument had the following sections: demographic data, physical activity, dietary recall, substance use, knowledge, beliefs, medication use, family support, lifestyle/self-care, surveillance/special tests, dental care, foot inspection, lifestyle changes, motivation to make changes, barriers to change and suggestions to facilitate changes, anthropometry, blood pressure, and biochemical measurements. Each interview was conducted by one of three experienced nurse researchers who interviewed the following proportions of participants: EMD (74%), YBW (18%), EYB (8%). The researchers had had no previous contact with the participants. Pre-testing of the instrument was conducted on persons with diabetes at another clinic and inter-rater reliability established. The client's knowledge was tested for: a) meaning of the word "diabetes"; b) possible causes of DM; c) whether DM could be cured; d) recognition of hypo/hyperglycaemia; e) possible complications; f) DM control; g) eye care and h) foot care. A score $> 80\%$ in the knowledge section was considered to be consistent with adequate knowledge of DM. Educational level was considered 'low' if the individual had no formal education or had primary education only. The mean of two blood pressure readings were recorded and anthropometric measurements were carried out by two trained measurers (AO, EMD). HbA_{1c} was determined using a DCA 2000 analyser (Bayer).

Motivation for making life-style changes and possible barriers were explored qualitatively, using a phenomenological approach and open-ended questions. Patients were asked to describe their lifestyle changes and their personal reasons for making changes. These texts were sorted, coded into themes and interpreted by the research team to identify motivational factors and barriers to therapeutic lifestyle changes. These were grouped into intrinsic and extrinsic factors with reference to the Health Belief and Health Promotion Models (7). Other data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 11.0.

RESULTS

Ninety-nine per cent of the 133 respondents had type 2 DM. Men were significantly older ($Z = -2.64, p = 0.008$): 61.8 ± 14.8 years (mean \pm SD) than women 54.9 ± 13.7 years, range 20–90 years (Table 1). Duration of DM was 12.4 ± 11.5 years

Table 1: Comparison of the ages of men and women with DM.

Ages (years)	Men (n=35)	Women (n=98)
Mean age (SD)	61.8 (14.8)	54.9 (13.7)**
Categories of ages	f (%)	f (%)
20–39.9 (%)	3 (9.0)	12 (12.0)
40–59.9 (%)	11 (31.0)	53 (54.0)
60–90 (%)	21 (60.0)	33 (34.0)
Total	35 (100.0)	98 (100)

Significant difference ** $p = 0.008$
f = frequency

for men, 12.1 ± 8.5 years for women. The majority (67%) reported having primary education or no formal education (Table 2).

Table 2: Educational levels of men and women with DM

	Men (n=35)	Women (n=98)
Educational level		
No formal education (%)	2 (6.0)	2 (2.0)
Primary (%)	22 (63.0)	63 (64.0)
Secondary (%)	11 (31.0)	23 (24.0)
Tertiary (%)	0 (0.0)	10 (10.0)
Total	35 (100)	98 (100)

Sixty-nine per cent were being treated with insulin or a combination of insulin and oral hypoglycaemic agents (OHAs). Others were taking OHAs only. Fifty-five per cent were not fully compliant with medication. Thirty (22.6%) respondents reported using a variety of "bush" teas such as cerasee (*Momordica charantia* L). Thirty-one (23%) were controlled to HbA_{1c} $\leq 6.5\%$. Thirty-six (27%) had blood pressure controlled to $\leq 130/80$ mmHg. Eighty-one per cent had BMI $> 25\text{kg/m}^2$.

The main source of information was the physician: 83 (62.4%) (Table 3). Only 20% scored $> 80\%$ on the know-

Table 3: Main sources of respondents' information of DM

Sources of information	frequency	per cent
Physician	83	62.4
Friends and church groups	16	12.0
Clinic's diabetes educator	14	10.5
Books/TV/radio	14	10.5
Clinic nurse	4	3.0
Dietitian	2	1.5
Total	133	100

ledge test. Women demonstrated a higher level of knowledge than men ($Z = -2.8, p = 0.006$). Knowledge scores were inversely associated with age ($r = -0.42, p < 0.001$), and positively associated with time since diagnosis ($r = 0.18, p = 0.04$) and respondents' level of education ($r = 0.31, p = 0.006$). Sixty-three (47%) respondents did not know the meaning of the word "diabetes". Twenty-four (18%) believed that diabetes could be cured (Table 4).

Table 4: Respondents' motivational factors and barriers to glycaemic control

Motivational Factors	Frequency	Per cent
Intrinsic factors		
To keep healthy	55.0	41.0
Perceived risk of complications	13.0	11.0
Fear of death, discomfort	11.0	8.6
Desire to live	9.0	6.5
Extrinsic factors		
Follow doctors' orders	19.0	14.0
Feeling compelled	9.0	6.5
Support from family and friends	8.0	5.8
Experience of complications	7.0	5.3
Barriers to positive lifestyle changes and glycaemic control		
Lack of self-monitoring of blood glucose	114.0	93.0
Lack of perceived risk of complications	111.0	83.7
Overweight or obese state	108.0	81.0
Inadequate knowledge	106.0	80.0
Little motivation to maintain health	78.0	59.0
Non-compliance with medication	60.0	45.0
Little effort to control diet	58.0	43.6
Use of "bush teas"	30.0	22.0
Belief that diabetes can be cured	24.0	18.0

n = 133; each respondent gave more than one response.

The majority (71%) reported the need for more education. Several (7.5%) suggested that the doctors needed to be more assertive with patients, and that they needed to explain more about diabetes and describe the complications of diabetes in greater detail (12.0%). Respondents also commented that the doctors needed to be more approachable as sometimes they were afraid to ask the doctors any questions including explanations of their laboratory results. A few (12.7%) respondents also indicated the need for financial assistance in order to manage their diabetes.

DISCUSSION

The respondents demonstrated inadequate knowledge of DM. For instance, many were unable to define the word "diabetes" and some believed that diabetes could be cured (Table 4). Although many were aware of the complications of DM, few were motivated to make life-style changes by the perceived risk or by the actual experience of complications (10). However, some were motivated by a desire to follow their doctors' orders.

The positive correlations between knowledge scores, time since diagnosis and educational level suggest that those

with a higher level of education were better able to understand their disease and that their knowledge accumulated over the span of their illness. Those with a low educational level, men, the elderly and those recently diagnosed with DM will require special attention (11). Education is frequently neglected in DM management (4), but an educational intervention study in adults with diabetes in the region has documented an improvement in HbA_{1c} in the intervention group (12). Studies in Jamaica have also demonstrated that individualized lifestyle changes can improve the control of chronic diseases (6).

The majority had poor glycaemic control, were overweight or obese, yet they did not recognize diet and weight control as being important. The preponderance of diabetes in the females (female to male ratio: 2.8:1) has been previously described (13). Although not assessed in this study, the high prevalence of DM may reflect the cultural acceptance of obesity especially in females (14). Social and economic factors actively encourage overeating and sedentary behaviour and discourage alterations in these patterns (15). There is a local belief that "bitter" bush teas lower blood sugar. The use of "bush teas" may have implications for medication compliance and efficacy (16).

This study revealed inadequate knowledge, a low perception of risk, weak motivational factors and other important barriers to positive lifestyle changes and glycaemic control in this population. Interventions to strengthen motivation and overcome these barriers are indicated along with further research to better understand the cultural barriers. These patients should also be screened for depression (7). The patients' age, gender, educational level and length of time since diagnosis will also be important considerations. The limited use of portable glucose monitors raises questions of affordability as well as the importance of acquiring the necessary skills. Families, peers, and healthcare providers are important sources of interpersonal influence that can increase or decrease commitment to and engagement in health promoting behaviour (7). The respondents' reliance on the physician as the primary source of information indicates the need for a change from a prescriptive to a collaborative team approach (17) involving individualized support for the client and family. Based on the findings of this study, diabetes education with trained diabetes educators, has been incorporated as an "indispensable medical service" at this clinic (18).

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