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Factors Associated with Readmission Following a Diagnosis of Diabetes: A Study of the Patients at Selected Major Hospitals in Trinidad and Tobago

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ABSTRACT

Aim: To ascertain the factors associated with readmission following a diagnosis of diabetes among readmitted diabetic patients at selected hospitals in Trinidad and Tobago. Method: A cross-sectional design was used to obtain information from all the admitted diabetic patients for a period of one month. A Likert-like researchers'-designed questionnaire was used to elicit the information. Data was analyzed using the SPSS programme. In all 260 patients volunteered. Result: Result showed an overall agreement with the selected factors with regard to being associated with patients' admissions. This result is irrespective of the patients' independent variables. It was however significant with regard to lifestyle factors and Education.

Discussion: The result was discussed in line with the multi-ethic and cultural diversity of Trinidad and Tobago. Conclusion: The result of this study concurs with literature and exposes the relevance of cultural and religious beliefs and practices, in particular, the role of support systems on issues associated with diabetes.

KEYWORDS : Caribbean Island, Diabetes management, Developing country

Background

Based on the reports of the International Diabetes Federation (IDF), the challenges of diabetes epidemic are more in the developing regions of the world [World Health Organization, International Diabetes Federation (2000)]. Although there is considerable regional and international campaign initiatives aimed at preventing diabetes on the entire globe [World Health Organization, International Diabetes Federation (2000)], the majority (80%) of diabetes-related deaths take place in the developing countries of the world [Roglic G, Unwin N (2010)]. Also Ezenwaka C, and Eckel J (2011) called for urgent need to focus more on preventing diabetes complications, it is important to understand and document the factors that are associated with repeated readmission for diabetes.

Equally of note is that these deaths as a result of diabetes and its complication follow prolonged and repeated admissions. At discharge following the initial diagnosis and treatment, it is envisaged that the patients would have been equipped with the information about the condition, particularly on how to avert the consequences. It is reasonable to expect that the patients would be able to comply with the treatment prescriptions and regimens. However, many diabetic patients come back for admissions and more often with more serious complications and repeatedly. Researchers (Axon & Williams 2011, Hoffman 2010 and Rubin 2015) have indicated that hospital readmission is a high-priority health care quality measure and target for cost of reduction. A number of factors ranging from lifestyle, social, geographic and economic factors as well as the disease management have been documented as some of the factors associated with readmission for diabetes in many countries.

or example, lifestyle factors, including not smoking, regular physical activity, healthy diet, moderate alcohol consumption, and normal body weight, are associated with a substantially decreased risk of developing diabetes (Hitt, 2011; Chandler, 2010; and McDougall 2002). Other factors are smoking (Williams, 2013), low income, lack of resources and poor access to health care facility (Public Health Agency of Canada, 2005). American Diabetes Association (ADA) {2005} included ethnicity and age as important factors associated with diabetes condition as the White Americans are less likely to have the condition compared to the Hispanic and Indian Americans. However, Darves (2013) indicated that incomplete, inaccurate or illegible discharge instructions contribute to conflicting information. Also competing medical priorities have been mentioned as a factor that overshadow diabetes discharge planning process in some countries (Rubin, 2015, and Knecht, Gauthier, Castro, Schmidt, and Whitaker and Zimmermann, 2006).

In Trinidad and Tobago, Baboolal (2012), identified that Diabetes is ranked as the second leading cause of death to its citizens. Gulliford, Baksh, Bickram, Picou and Mahabir (1995), stated that in a register of all diabetics admitted to adult medical, general surgical, and ophthalmology wards at Port of Spain General Hospital Trinidad, 1447 patients with diabetes had 1722 admissions during 26 weeks. They also stated that Diabetes accounted for 13.6% of hospital admissions and 23% of hospital bed occupancy. Admissions associated with disorders of blood glucose control or foot problems accounted for 52% of diabetic hospital bed occupancy and estimated the cost of admissions as a result of Diabetes at approximately TT 10 million dollars (US $ 1.6Million). This is a major cost for a country of 1.3 million inhabitants. Also, it is reasonable to expect some studies as to what factors are responsible for this high cost of readmissions due to diabetes in a developing high income country such as Trinidad and Tobago (Ezenwaka, Onuoha, Sandy & Israel-Richardson, 20014), Thus, this gap in knowledge with regard to the factors associated with readmission

of diabetic patient in hospital in the Caribbean has necessitated this study. This study is therefore an attempt to document such information with regard to some hospitals in Trinidad and Tobago.

Aims

This study is to determine the factors associated with readmission of patients with Diabetes at two selected local hospitals in Trinidad and Tobago.

Methodology

Design

A cross-sectional research design where according to Institute for Work and Health (2009), is an observational type where researchers record information on their subjects without changing the atmosphere of the study. Abramson and Abramson (1999) indicated that this study is a prevalent, instantaneous and simultaneous study where subjects provide information about a situation that exists at a single time. In this case, admitted diabetic patients are expected to provide the information about their situation related to diabetes readmission while admitted to the wards in the e selected hospitals in Trinidad and Tobago. They further state that this type of study design allows researchers to compare different population groups at one single point in time.

Populations/Sample: The sample consisted of the admitted patients who volunteered to take part in the study, and who signed the consent form provided for the period January to march, 2014. They totaled 260 patients of diverse demographic characteristics.

Instrument for data collection

The data collection instrument that was used to obtain information was a structured questionnaire. The questionnaire was comprised 4 sections namely: Demographic consisting of 6 items indicating the independent variables of study; the Geographic factors; the lifestyle, and the psycho-social factors each consisting of 10 items based on guided by literature. All the items in the questionnaire pertaining to the dependent variables are structured in a Likert-like type where the respondents needed to indicate their level of agreement ranging from strongly agree, to strongly disagree on a continuous scale. In all, 36 items made up the instrument.

Ethical Considerations.

We obtained the necessary ethical approval from (a) the ethics Committee of the University of West Indies, (b) the ethics committees of the local hospitals and (c) secured consent from the individual respondents who were requested to sign the informed consent forms provided. These were done to ensure that the respondents' rights for self-determination, and other ethical applicable codes were observed (Polit & Hungler, 1999).

Treatment of data

The demographic characteristics which constituted the independent variable were collated and their frequencies calculated. The responses on the dependent variables, made up of economic, (with items such as cost of care, ability to finance cost, etc.); geographic (including items such as distance from healthcare, poor road infrastructure etc.) lifestyle (diets, fast food attitudes, alcohol etc., , and psychosocial (family support, counselling availability, etc.) factors were scored from strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1) respectively. This enabled the responses to be analyzed as though there were quantitative variables and hence their mean responses were calculated accordingly. The mean scores were expected to range from 1 to 5 (strongly disagree to strongly agree, respectively).

Results

Table 1 shows that the total number of patients readmitted and who volunteered to be part of the study consisted of 260. Their distribution at the selected hospitals shows that majority of the patients were males (52.5%), were married (42.1%), were of African descent (45%) and were more than 56 years of age (36.6%). The Table also shows that they were mostly of Christian denominations. Their educational attainment ranged from Primary school (20.2%), Secondary (35.5%), college/technical (20.8&) University (19.1%) and others (4.4%).

In an attempt to find out the factors that may have warranted their recent readmission, the result shows (a) social factors, consisting of 10 items including availability of counseling, family support, cultural beliefs, membership of diabetic associations etc., had a mean response of 3.872 with a standard deviation of 0.97. Geographic factors consisted also of 10 items including the distance from health facility, availability of transport, poor road infrastructure, how remote patients' resident is located to nearest health facility, etc. scored 4.1184 with a standard deviation of 0.88. Lifestyle factors included items such as diets, consumption of high carbohydrate foods and alcohols, extent of exercise, use of appropriate footwear, nature of jobs, etc. scored 4.2270 with a standard deviation of 0.81. Economic factors scored 4.006 and a stand deviation of 0.84. Items in economic factors included ability to afford care materials, ownership of blood glucose device, etc. (Table 2).

Table 1: Demographic Characteristics of the Diabetic Patients N= 260

Factors	%
Gender	
Male	*52.5*
Female	*47.5*
Marital Status	
Single	*27.3*
Married	*42.1*
Common-law	*20.2*
Widow/widower	*4.9*
Divorced	*5.5*
Ethnic descent	
African	*45.9*
East Indian	*34.4*
Chinese	*6.6*
Others	*13.1*
Age	
Less than 26	*6.6*
26-35	*14.2*
36-45	*18.6*
46-55	*24.0*
56 or older	*36.6*
Religion	
Christianity	*68.9*
Muslim	*11.5*
Hindu	*16.4*
Others	*3.2*
Highest education attained	
Primary	*20.2*
Secondary	*35.5*
College/Technical	*20.8*
University	*19.1*
Others	*4.4*

Table 2: Mean responses on selected factors of Readmission N=260

Variable	Mean	Standard Deviation
psychosocial	3.872	0.9749
Geographic	4.1184	0.8785
Lifestyle	4.227	0.8137
Economic	4.006	0.8369

Although the responses appeared to indicate general agreement of these factors contributing to their readmission, we attempted to see if their responses are associated with their independent variables namely, age, gender, educational ethnicity and religion. Table 3 shows that only among the lifestyle factors were their responses related to their education, P>0.022. (Table3).

Discussion

There is little surprise with the distribution of the readmitted patients following diabetes in Table 1. Trinidad and Tobago is a multi-ethnic country. It is also less surprising that majority of the admitted patients are males. The result tend to concur with Asper (2009) that suggested that because women are more likely to receive support than males, the readmission rate are likely to be higher among the males than females. With regard to age, we expected that the readmission rate would be higher among the older patients than the younger patients. Partly due the progressivity of the condition, and the decrease in care given to the older patients (Chiang, Kirman, Laffel & Peters (2014).

Table 3: Relationship between the factors (social, lifestyle, economic and geographic) and the Independent variables (age, gender, education, ethnicity and reli-

gion) of the readmitted patients. N=260.

Independent Variable	χ^2 **Value**	Df	Sig. value
Social			
Age	*124.986*	*115*	*.247*
Gender	*19.156*	*24*	*.744*
Education	*139.810*	*120*	*.104*
Ethnicity	*118.996*	*129*	.509
religion	*95.195*	*120*	.954
Lifestyle			
Age	*124.251*	*20*	*.132*
Gender	*130.341*	*100*	.155
Education	*94.003*	*100*	.022*
Ethnicity	*125.818*	*100*	.650
Religion	*27.101*	*100*	.41
			.
Economic			
Age	*109.920*	*115*	*.616*
Gender	*21.386*	*23*	*.558*
Education	*108.414*	*115*	*.655*
Ethnicity	*124.986*	*115*	.247
Religion	*95.279*	*115*	.910
Geographic			
Age	*122.174*	*115*	*.306*
Gender	*25.922*	*23*	*.305*
Education	*127.364*	*115*	*.203*
Ethnicity	*137.639*	*115*	*.74*
Religion	*95.852*	*115*	*.902*

* Statistically significant

The result in Table 2 gives a somewhat general agreement of the patients that all factors (social, geographic, lifestyle and economic) indeed contribute to their admission, much more for lifestyle, followed by geographic and economic. Generally, they did not quite agree to social factors with a mean of less than 4.0. Trinidad is somewhat a family-oriented society, where cultural values are practiced by the different ethnicities in the twin Island state. These cultures and religions tend to provide values of charity and care of the less privileged, including the elderly (Darves, 2013, Garrison, Katon, & Richardson (2013), Hitts (2011), Chandler, 2010). However, these did not underscore the fact that diabetes is a chronic and expensive condition (Asper 2009), which requires a lot of economic expenditure to maintain the needed care to keep well throughout life (Onuoha & Ezenwaka, 2014; and Ezenwaka, Onuoha & Olukoga, 2013).

Finally, the finding that the readmitted patients' education is significantly related to their responses on how lifestyle ($p>0.022$) affects their condition goes to show how education is a factor in the management of diabetes. It can be inferred from Table one, that more of the readmitted patients have less "education" (Primary and secondary education) which somehow may have affected the types of jobs they are doing or retired from and therefore of their earning capacity.

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