Analysis the significant risk factors on type 2 diabetes perspective of Bangladesh

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A R T I C L E   I N F O

A B S T R A C T

Millions of people in Bangladesh and the world have a metabolic disease named diabetes. It is also responsible for occurring different kinds of diseases such as heart attack, kidney disease, blindness and renal failure. Diabetes is a deadly, disabling disease whose risk is increasing at an alarming rate day by day perspective to Bangladesh. The detection process of diabetes is a tedious and multilayered task from some important risk factors. Like other diseases, Type2 diabetes also depends on some factors that are known as risk factors of Type2 diabetes. Risk factors are divided into four categories like Scio-economic condition, Habits, Family History and Hard Diseases etc. in proposed system. Initially 731 diabetes and non-diabetes patient's data have been collected from different diagnostic centers, pre-processed and clustered for identifying relevant and non-relevant data. Significant factors are discovered according to four categories. Next correlation is assessment among significant factors. Finally highly significant factors are discovered whose are directly or indirectly associated with type2 diabetes. Results indicate that Age, Area of Residence, Education Level, Social Status, Family Income, Expense, Tobacco, BMI, Family History, Physical Exercise and Hard Diseases have worst impact on Quality of Life (QoL) among all factors of type2 diabetes respectively.

1. Introduction

Diabetes mellitus is a major global health problem, affecting 382 million people, accounting for 5.3 million deaths in 2013. By 2035 the number of affected people is expected to increase to 592 million globally. About 80% of adults with diabetes live in low- and middle-income countries. Diabetes has become the seventh leading attributable risk factor for burden of disease in South Asian countries. Previously diabetes was a disease of the affluent, but now it has become a major public health problem in low- and middle-income countries, particularly affecting South Asians. The economic and disease burden associated with non-communicable diseases especially diabetes puts enormous pressure on fragile health systems in low-income countries [2]. In the South Asian region, Bangladesh has the second largest number of adults with diabetes (5.1 million adults, 6.31%)[1]. Therefore, understanding the extent to which households or populations are not being diagnosed, treated, and controlling their diabetes condition may reveal opportunities to reduce premature death, disability, and household economic shock. Materials and Methods are explained in section II. Result section employed in this paper is in section III. The Discussion of this paper explains in section IV.

2. Materials and methods

Quality of life (QoL) is an important health outcome in its own right, representing the ultimate goal of all health interventions. Nevertheless complications of diabetes are the most important disease-specific determinant of quality of life. So, significant risks factor in type2 diabetes is a challenging tasks in recent research area. The whole system is divided into some steps (such as Data Collection and Verification, Relevant Data Investigation, Data Preprocessing, Clustering, Correlation Assessment, Associated Factors Investigation).

3. Data collection and verification

At first, collect some questionnaires about type-2 diabetes perspective of Bangladesh. There are 731 diabetes and non-diabetes patients' data that have been collected from different diagnostic centers or sources such as (Shekh Hasina Medical

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Table 1
Frequency Distribution with p-value of Risk Factors between Case Group and Control Group.

Factors	Diabetes Status					P-Value
	Affected		Unaffected			
	N	(%)	N	(%)		
Area of Residence						0.300
Rural	153	44.0%	148	38.6%		
Urban	107	30.7%	123	32.1%		
Suburban	88	25.3%	112	29.2%		
Occupation						0.122
Business	32	9.2%	46	12.0%		
Govt./Private Job	120	34.5%	106	27.7%		
Farmer/Shopkeeper	56	16.1%	59	15.4%		
Unemployed	10	2.9%	21	5.5%		
Housewife	130	37.4%	151	39.4%		
Social Class						0.000*
Rich	85	24.4%	65	17.0%		
Upper Middle	133	38.2%	192	50.1%		
Lower Middle	102	29.3%	113	29.5%		
Poor	28	8.0%	13	3.4%		
Family Income (Monthly)						0.000*
<3000	27	7.8%	9	4.9%		
3000-8000	81	23.3%	56	18.7%		
8000-18000	93	26.7%	111	27.9%		
18000-30,000	96	27.6%	151	33.8%		
>30,000	51	14.7%	56	14.6%		
Expense (Monthly)						0.000*
Below Average	97	27.9%	45	11.7%		
Reasonable	189	54.3%	268	62.5%		
Extensive	62	17.8%	70	18.1%		
Smoking						0.387
Yes	90	25.9%	110	28.7%		
No	258	74.1%	273	71.3%		
Tobacco/Leaf/Jorda						0.004*
Yes	138	39.7%	193	50.4%		
No	210	60.3%	190	49.6%		
Physical Exercise						0.000*
Daily-Sedentary	101	29.0%	155	40.5%		
Daily-Light	60	17.2%	18	4.7%		
Daily-Moderate	14	4.0%	12	3.1%		
Occasionally-Sedentary	34	9.8%	45	11.7%		
Occasionally-Light	94	27.0%	118	30.8%		
Occasionally-Moderate	12	3.4%	8	2.1%		
No	33	9.5%	27	7.0%		
Age						0.000*
20-30	7	2.0%	32	5.3%		
30-45	86	24.7%	125	28.9%		
45-Above	255	73.3%	226	65.8%		
Sex						0.134
Male	203	58.3%	198	54.9%		
Female	145	41.7%	184	45.1%		
Education Level						0.002*
Illiterate	90	26.0%	69	21.8%		
Primary Level	65	19.0%	88	20.9%		
Secondary Level	89	26.0%	109	27.1%		
Undergraduate	29	8.3%	14	5.9%		
Graguate/ Post-graduate	52	15.0%	83	18.5%		
Post-Doctoral/ Researcher	23	6.7%	20	5.9%		
Knowledge about Diabetes						0.479
Yes	98	28.2%	117	30.5%		
No	250	71.8%	266	69.5%		
Knowledge about Obesity						0.622
Yes	80	23.0%	94	24.5%		
No	268	77.0%	289	75.5%		
BMI (Body Mass Index)						0.002*
Normal Range	66	19.0%	38	9.9%		
Overweight	212	45.8%	251	65.5%		
Obese	70	20.1%	94	24.6%		
Family Diabetes History						0.000*
Grand Parents	51	14.7%	29	7.6%		
Father	85	24.4%	73	19.1%		
Mother	61	17.5%	59	15.4%		
Siblings	33	9.5%	78	20.4%		
Spouse	7	2.0%	6	1.6%		
Others	6	1.7%	15	3.9%		
No	105	30.2%	123	32.1%		
Other Complications						0.000*