Socio-economic Status of the Patients with Acute Coronary Syndrome: Data from a District-level General Hospital of Bangladesh

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Key Words: *Socio-economic status, Acute coronary syndrome, District-level general hospital, Lower socio-economic class.*

Abstract:

Background: *Several studies have reported the correlation between socio-economic status (SES) and incidence of acute coronary syndrome (ACS). However, none of these studies have included data on Bangladesh. Hence, we aimed to find out the SES among the patients with ACS admitted in a district-level general hospital of Bangladesh.*

Methods: *All the patients with a diagnosis of ACS admitted from March 2016 to February 2017 in the Cardiology department of 250-bedded General Hospital (Abdul Malek Ukil Medical College & Hospital), Noakhali were enrolled in this study. Data on demography, risk factors and SES parameters of the patients was screened and recorded with the help of a pre-defined questionnaire. Socio-economic profile of the patients was defined according to modified Kuppuswamy SES scale.*

Results: *A total of 366 patients were included (mean age 56.6 ± 11.5 years, 261 male and 105 female). Most of the patients had multiple risk factors like smoking, hypertension, diabetes, dyslipidemia and family history of cardiovascular disease. 80.1% (n=293) of the studied patients were from lower socio-economic class followed by 18.3% (n=67) from middle class and only 1.6% (n=6) were from upper class.*

Conclusion: *This study found that most of the patients admitted due to ACS in a district-level general hospital of Bangladesh are from lower socio-economic class. These findings could be useful to draw the attention of health authorities towards people of lower socio-economic class and to adopt preventive strategies for them against ACS.*

(Cardiovasc. j. 2017; 10(1): 17-20)

Introduction:

Socio-economic status is considered as one of the important factors for the incidence and progression of several diseases including acute coronary syndrome.[1] A number of studies have reported the correlation between SES and the incidence of ACS. It has been shown constantly that individuals having lower SES are more prone towards coronary disorders compared to those who are wealthier or live in better environment with good educational and economical status.[2-7]

Though several studies have reported the correlation between SES and the incidence of ACS, there is still lack of data on Bangladesh regarding this matter. Hence, we aimed to find out the SES among the patients with ACS. We have chosen a district-level general hospital of Bangladesh for the convenience of data collection. The study center was 250-bedded General Hospital (Abdul Malek Ukil Medical College & Hospital), Noakhali.

Bangladesh is one of the most densely populated countries in the world with a population of more than 160 million people. Bangladesh has been upgraded from low income country to lower-middle income country as per the World Bank's classification since July 2015. Despite the fact, 31% people in Bangladesh still live below the national poverty line (per day income less than 2 US dollar).

Noakhali is a district of more than 3 million people located in the south-eastern part of Bangladesh. Agriculture plays a vital role in the regional economy of Noakhali. 45% of the population employed in the

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sector. 15-20% of the population employed in fishing who are mostly poor. Besides main sources of income are dependent on non-agricultural labor 3.4%, industry 0.8%, commerce 14.7%, transport and communication 3.8%, service 16.1%, construction 1.5%, religious service 0.4%, rent and remittance 7.9% and others 10.6%. Furthermore, a substantial population of Noakhali lives in abroad for their job and they play a vital role in the national economy.

Methods:

This is a single-centered, non-randomized study. All the patients with a diagnosis of ACS admitted from 1st March 2016 to 28th February 2017 in the Cardiology department of 250-bedded General Hospital (Abdul Malek Ukil Medical College & Hospital), Noakhali were enrolled in this study. Data on demography, risk factors and SES parameters of the patients was screened and recorded with the help of a pre-defined questionnaire.

Hypertension was defined as >140 mmHg systolic blood pressure or >90 mmHg diastolic blood pressure on at least two occasions or current use of any antihypertensive therapy.[8] Diabetes was diagnosed when patient had classical symptoms of diabetes plus random plasma glucose concentration e"200 mg/dl (11.1 mmol/L) or FPG e"126 mg/dl (7 mmol/L) or 2-hr post load glucose ≥ 200 mg/dl (11.1 mmol/L) during an OGTT or using anti-diabetic medications. Dyslipidemia was diagnosed according to ATP-III criteria: LDL cholesterol >100 mg/dl, Total cholesterol > 200 mg/dl, HDL cholesterol <40 mg/dl, triglycerides >150 mg/dl.[9] Family early history of ischemic heart disease (IHD) was considered when any direct blood relative (parents, siblings, children) had any of the following at age <55 years: angina, MI, sudden cardiac death without obvious cause.[10] Socio-economic profile of the patients was defined according to modified Kuppuswamy SES scale (Table-I).[11] Data were analyzed using SPSS statistical software version 18 (Chicago, IL, USA).

Results:

The study included a total of 366 patients. The mean age of the patients was 56.6 ± 11.5 years. Among the patients, 261 were male and 105 were female. Most of the patients had multiple risk factors like smoking, hypertension, diabetes, dyslipidemia and family history of cardiovascular disease. Smoking was the most prevalent risk factor followed by hypertension, diabetes, dyslipidemia and family history of cardiovascular disease (Fig-1). 80.1% (n=293) of the studied patients were from lower socio-economic class followed by 18.3% (n=67) from middle class and only 1.6% (n=6) were from upper class (Fig-2).

Table-I

Modified Kuppuswamy Socio-economic scale

Category	Score
A. Education	
Professors or honors	7
Graduate or post graduate	6
Higher secondary school or diploma certificate	5
Secondary school certificate	4
Junior school certificate	3
Primary school certificate	2
Illiterate	1
B. Occupation	
Professional	10
Semi-professional	6
Clerical, shop-owner, farmer	5
Skilled worker	4
Semi-skilled worker	3
Unskilled worker	2
Unemployed	1
C. Family income per month in Bangladeshi Taka*	
> 50,000	12
25,000 to 50,000	10
15,000 to 25,000	6
10,000 to 15,000	4
5,000 to 10,000	3
2,000 to 5,000	2
< 2,000	1
Socio-economic class	
Upper Class	26 to 29
Middle Class	10 to 25
Lower Class	< 10

* Converted from Indian Rupee

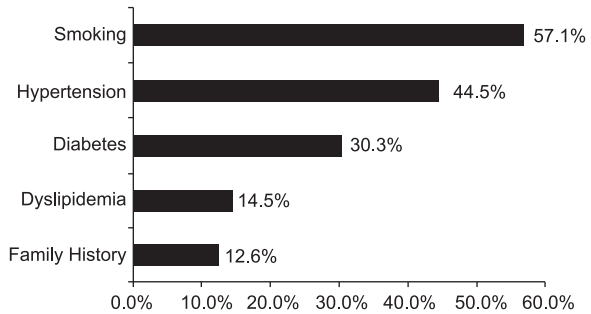

Fig-1: *Risk factors among the patients (n=366). Remarks: Same patients had more than one risk factor.*

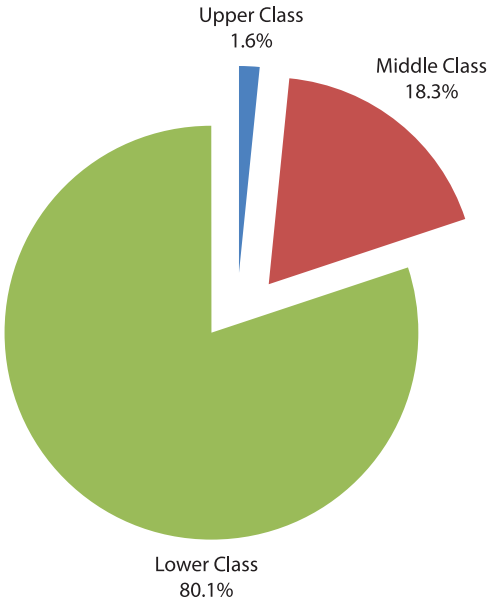

Fig-2: *Socio-economic status of the patients (n=366).*

Discussion:

This single-centered, non-randomized study found that most of the patients admitted due to ACS in a district-level general hospital of Bangladesh are from lower socio-economic class. A number of studies have also reported similar findings.[2-7] Sethi R et al.[2] found that the patient of lower SES in India have greater incidence of ACS due to significantly higher levels of high sensitivity C-reactive protein. Alam S et al.[3] studied the association of SES on the hospitalization due to ACS among population of Karachi, Pakistan. They also found that the highest number hospitalized patients with ACS were from lower socio-economic class.

Smoking was the most prevalent risk factor among our study patients. 57.1% of our study patients were smoker. Previously, Karim MA et al.[12] reported a 64% prevalence of smoking among similar type of patients in Bangladesh. Our patients had multiple risk factors including hypertension (44.5%), diabetes (30.3%), dyslipidemia (14.5%) and family history of cardiovascular disease (12.6%). These findings are consistent with previous studies performed in Bangladesh.[12-15]

The findings of our study can be explained by several facts. Higher percentages of smoking might play a vital role in the incidence of ACS among patients from lower class. Smoking is already an established and predominant risk factor for ACS.[16-18] Due to poverty and lack awareness, most of these patients were irregular to take medication or unable to purchase medication to control their risk factors particularly hypertension and diabetes. Both uncontrolled hypertension and diabetes have strong influence on ACS.[19-20] Another notable fact is that the patients of upper and middle class have a strong tendency to go to specialized centers in Dhaka or Chittagong for better treatment of ACS.

This study has some limitations. Notably, this is single-centered study with limited number of patients. Large-scale and multi-centered studies are required to obtain more information on correlation between SES and the incidence of ACS among Bangladeshi patients.

Conclusion:

We have found that most of the patients admitted due to ACS in a district-level general hospital of Bangladesh are from lower socio-economic class. These findings could be useful to draw the attention of health authorities towards people of lower socio-economic class. These findings would also help us to adopt preventive strategies for them against ACS, like- carrying out awareness campaign to control major risk factors notably smoking, hypertension and diabetes.

Conflict of Interest - None.

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