

Prevalence of Comorbidity among the Patients with Angina in a Divisional City of Bangladesh

Kazi Shamim Al Mamun^{1*}, Md. Moniruzzaman², Mohammad Ibrahim Chowdhury³, Ganesh Chandra Halder⁴, Saifuddin Mahmud⁵, A M M Rezaul Karim Mansur⁶, M M Alam Sadi⁷, Md. Abdul Hamid Sagar⁸, Mohiuddin Humayun Kabir Chowdhury⁹, Alok Kumar Mandal¹⁰, Miah Wahiduzzaman¹¹, Md Ariful Islam¹² and Md. Rizwan Rehan¹³

¹Senior Consultant, Clinical & Intervention Cardiologist, Department of Cardiology, 250-bed District Sadar Hospital, Cox's Bazar, Chattogram, Bangladesh.

²Consultant, Department of Cardiology, Sheikh Fazilatunnessa Mujib Memorial KPJ Specialized Hospital, Dhaka.

³Associate Professor, Department of cardiology, Chattogram Medical College Hospital.

⁴Associate Professor, Department of Cardiology, Eastern Medical College, Cumilla.

⁵Junior Consultant (Medicine), Dohazari 31beded hospital, Chandanaish, Chattogram

⁶Associate Professor, Department of Medicine, Chattogram Medical College & Hospital.

⁷Chief Consultant, Coronary Care Unit (CCU), Parkview Hospital Limited.

⁸Junior Consultant, Department of Cardiology, Chattogram Medical College Hospital.

⁹Associate Professor, Department of Medicine, Abdul Malek Ukil Medical College, Noakhali.

¹⁰Assistant Professor, Cardiology Department, Shaheed Sheikh Abu Naser Specialized Hospital, Khulna.

¹¹Assistant Professor, Department of Medicine, Holy family Medical College & Hospital and Chamber.

¹²Assistant Register, Department of Medicine, Rajshahi Medical College Hospital, Rajshahi, Bangladesh.

¹³Assistant Professor, Department of cardiology, Chattogram Medical College Hospital.

*Corresponding author

Dr. Kazi Shamim Al Mamun, MD,
Senior Consultant, Clinical & Intervention Cardiologist,
Department of Cardiology,
250 bed District Sadar Hospital, Cox's Bazar,
Chattogram, Bangladesh.

Submitted : 9 Oct 2023 ; Published : 12 Dec 2023

Citation : Al Mamun, K. S. *et al* (2023). Prevalence of Comorbidity among the Patients with Angina in a Divisional City of Bangladesh. I J cardio & card diso 4(4): 1-6.

Abstract

Introduction

Bangladesh has experienced a significant increase in the presence of non-communicable chronic diseases and associated mortality and morbidity in the last few decades. Chest pain is a common complaint and reason for consultation among them. This study aimed to analyze the prevalence of comorbidity among patients with angina in a divisional city in Bangladesh.

Method

This Prospective cross-sectional study was conducted at the Department of Emergency, Delta Health Care, Chittagong Ltd and CSCR (pvt) Ltd, Chattogram, Bangladesh. The study duration was January '20 to June '22. A total of 420 patients presenting in the emergency department were enrolled in this study following the inclusive criteria. Data were collected using the predesigned semi-structured questionnaire. A consecutive sampling technique was used. Data were processed and analyzed by SPSS version 20.0. Unpaired t-tests and Chi-square tests were performed to observe the association between the study variables, where $p < 0.05$ was considered the level of significance with 95% CI. Verbal consent was taken before recruiting the study population. Ethical clearance of this study was taken from the Ethical Review Committee of Delta Health Care, Ctg. Ltd and CSCR Ltd, Chattogram. The information was kept confidential only to be used for the study purpose.

Result

In this study, most of the patients (123, 29.3%) belonged to the age group of 50-59 years, with a minimum of 35 years and a maximum of 90 years of age. The mean age was 57.18 ± 11.57 . Most of the patients (222, 52.9%) were male and the rest were female with a male-to-female ratio of 1.1:1. 95 (31.6%) patients from the 50-59 years age group, followed by, 82 (27.2%) patients from the 60-69 years age group complained of chest pain among all the study subjects with male preponderance (169, 56.1%). In contrast, 37 (31.1%) patients from the 60-69 years age group did not experience chest pain, and female preponderance was seen in the patients who did not complain of chest pain. There was no significant association of chest pain with age distribution but with sex. The comorbid conditions were DM, HTN, IHD, CAD. Chest pain was present in 122 (40.5%) and absent in 53 (44.5%) diabetic patients, it was also present in 150 (49.8%) and absent in 59 (49.6%) patients with IHD. Chest pain was present in 94 (31.2%) and absent in 37 (31.1%) patients with CAD and present in 188 (62.5%) absent in 77 (64.7%) hypertensive patients as well. There was no significant association between the comorbidities and chest pain. There was no significant relation between blood pressure with chest pain.

Conclusion

This study concluded that the mentioned comorbid conditions (DM, HTN, IHD, CAD, dyslipidemia) did not show any significant prevalence rate in patients with angina. However, some patients had one or more such conditions along with chest pain which was not statistically significant.

Keywords : Angina, Comorbidity, DM, HTN, Dyslipidemia, CAD

Introduction

Coronary artery disease (CAD) is the leading cause of death in men and women worldwide and accounts for about a third of all deaths in women in the western world. (Javed et al., 2006) Comorbid health conditions such as heart disease, pulmonary disease, diabetes, and arthritis are commonly present in elderly patients. The diagnosis of cancer in the senior adult population is often made amidst the diagnosis or treatment of other medical conditions and geriatric syndromes (i.e., cognitive impairment, depression, polypharmacy secondary to multiple comorbidities). (Piccirillo et al., 2008) Approximately 8 million patients with chest pain present annually to emergency departments. Five million of this group are judged to have suspected acute coronary syndromes and are admitted to the hospital. (Storrow & Gibler, 2000) The evaluation of patients presenting to the emergency department with chest pain is challenging for the clinician. Little objective evidence is available to differentiate patients presenting with coronary artery disease from those who have other causes of chest pain. The clinician must rely on the patient's description of chest discomfort; the presence or absence of symptoms such as nausea, vomiting, or diaphoresis; and the presence of risk factors for coronary artery disease to determine the diagnosis. (Gibler et al., 1995) Find-

ings on physical examination are usually normal in most low-risk patients undergoing an ACS evaluation. However, certain findings can be useful for risk stratification and for determining symptom etiology. Important findings identifying high-risk patients include chronic heart failure (CHF) and hemodynamic instability (low blood pressure, elevated heart rate). Abnormal vital signs are recognized high-risk findings included in several scoring systems. (Kontos et al., 2010) The atypical presentation of many AMI patients can include symptoms such as nausea, shortness of breath, abdominal pain, syncope, and dizziness. Twenty-five percent of AMI patients may have no chest pain and are clinically silent. Because of missed diagnosis of at least 2% of AMI patients, inappropriate early discharge also results in significant morbidity and mortality. Unstable angina pectoris is another major cause of chest pain and is responsible for more than 750000 hospitalizations annually. (Kahn, 2000) Although not all MI patients exhibit the classic symptoms of chest pain, the extent to which this phenomenon occurs is largely unknown. (Canto et al., 2000) Important differences exist when clinical features are specifically investigated in patients with acute chest pain and a nondiagnostic electrocardiogram. Although clinical features have a limited role

to play in triage decision making. (Goodacre et al., 2002) The most frequent features are shortness of breath, abdominal pain, and dizziness. (Clark et al., 1989) This study aimed to analyze the prevalence of comorbidity among patients with angina in a divisional city in Bangladesh.

Objective

General Objective

- To analyze the prevalence of comorbidity among patients with angina in a divisional city of Bangladesh.

Specific Objectives

- To see the distribution of the study subjects by chest pain and presenting complaints.
- To see the distribution of the study subjects by comorbid disease
- To assess the descriptive Statistics of SBP, DBP, and pulse
- To know the association of chest pain with age and sex distribution of the study patients
- To know the association of comorbidities with chest pain among the study patients

Methods

This Prospective cross-sectional study was conducted at the Department of Department of Emergency, Delta Health Care, Chittagong Ltd (Tertiary Care Hospital) and CSCR (pvt) Ltd (Hospital & diagnostic centre), Chattogram, Bangladesh. The study duration was January'20 to June'22. A total of 420 patients presenting in the emergency department were enrolled in this study following the inclusion criteria. Data were collected using the predesigned semi-structured questionnaire. A consecutive sampling technique was used. Data were processed and analyzed by SPSS version 20.0. Unpaired t-tests and Chi-square tests were performed to observe the association between the study variables, where $p < 0.05$ was considered the level of significance with 95% CI. Verbal consent was taken before recruiting the study population. Ethical clearance of this study was taken from the Ethical Review Committee of Delta Health Care, Chattogram. The information was kept confidential only to be used for the study purpose.

Inclusion Criteria

- Patients of 30-90 years of age and both sexes.
- Patients presenting with chest pain.
- Patients who had given consent to participate in the study.

Exclusion Criteria

- Patients who did not give consent to participate in the study.

Results

In this study, most of the patients (123, 29.3%) belonged to the age group of 50-59 years, with a minimum of 35 years and a maximum of 90 years of age. The mean age was 57.18 ± 11.57 . most of the patients (222, 52.9%) were male and the rest were female with a male-to-female ratio of 1.1:1 [Table 1].

Variables	N	%
Age group (years)		
30-39	34	8.1
40-49	73	17.4
50-59	123	29.3
60-69	119	28.3
70-79	56	13.3
80-90	15	3.6
Mean±SD Range (min-max)	57.18±11.57 (35 – 90) years	
Sex		
Male	222	52.9
Female	198	47.1
Male: Female ratio	1.1: 1	

Table 1: Age and sex distribution of the study subjects (N=420)

Among the study respondents, most of the patients (301, 71.7%) complained of chest pain. [Table 2]

Chest pain	N	%
Present	301	71.7
Absent	119	28.9
Total	420	100.0

Table 2: Distribution of the study subjects by chest pain (N=420)

Regarding presenting complaints, the maximum number of patients (345, 82.1%) experienced weakness, followed by, (169, 40.2%) insomnia, (168, 40%) shortness of breath, (105, 25%), and cough. [Table 3].

Presenting complaints	N	%
Palpitation	64	15.2
Cough	105	25.0
Bodyache	13	3.1
Fever	14	3.3
LBP	48	11.4
Loss of Appetite	14	3.3
Insomnia	169	40.2
Vertigo	53	12.6
Joint pain	33	7.9
Headache	9	2.1
Sweating	9	2.1

Oedema	17	4.0
Weakness	345	82.1
Dyspnea	14	3.3
Constipation	21	5.0
Abdominal Pain	22	5.2
Mouth ulcer	4	1.0
Neck pain	24	5.7
Anxiety	17	4.0
SOB	168	40.0
Br Asthma	5	1.2

Table 3: Distribution of the study subjects by presenting complaints (N=420)

Concerning comorbid diseases, the maximum number of patients (265, 63.1%) had hypertension (HTN), followed by, (209, 49.8%) ischemic heart disease (IHD), (175, 41.7%) diabetes mellitus (DM), (131, 31.2%) coronary artery disease (CAD), and (6, 1.4%) dyslipidemia. [Table 4].

Comorbid Disease	N	%
DM	175	41.7
HTN	265	63.1
IHD	209	49.8
CAD	131	31.2
Dyslipidemia	6	1.4

Table 4: Distribution of the study subjects by comorbid disease (N=420)

Considering SBP, DBP, and pulse, mean SBP was 127.6 mmHg with a minimum of 70 mmHg and a maximum of 200mmHg, mean DBP was 81.4 mmHg with a minimum of 60 mmHg and a maximum of 110 mmHg, mean pulse rate was 81.6 b/m with a minimum of 42 b/m and a maximum of 130 b/m. [Table 5].

	N	Minimum	Maximum	Mean	SD
SBP (mmHg)	420	70.0	200.0	127.6	17.3
DBP (mmHg)	420	60.0	110.0	81.4	8.5
Pulse (beats/min)	420	42.0	130.0	81.6	10.5

Table 5: Descriptive Statistics of SBP, DBP, and pulse (N=420)

95 (31.6%) patients from the 50-59 years age group, followed by, 82 (27.2%) patients from the 60-69 years age group complained of chest pain among all the study subjects with male preponderance (169, 56.1%). In contrast, 37 (31.1%) patients from the 60-69 years age group did not experience chest pain, and female preponderance was seen in the patients who did not complain of chest pain. There was no significant association of chest pain with age distribution but with sex. [Table 6].

Variables	Chest pain		p-value
	Present (n=301) No. (%)	Absent (n=119) No. (%)	
Age group (years)			
30-39	22(7.3%)	12(10.1%)	0.597
40-49	49(16.3%)	24(20.2%)	
50-59	95(31.6%)	28(23.5%)	
60-69	82(27.2%)	37(31.1%)	
70-79	46(15.3%)	10(8.4%)	
80-90	7(2.3%)	8(6.7%)	
Total	301(100.0%)	119(100.0%)	
Mean±SD	57.4±11.2	56.7±12.5	
Sex			
Male	169(56.1%)	53(44.5%)	0.032*
Female	132(43.9%)	66(55.5%)	
Total	301(100.0%)	119(100.0%)	

The p-value obtained by Unpaired t-test and Chi-square test, *significant (p<0.05)

Table 6: Association of chest pain with age and sex distribution of the study patients (N=420)

Chest pain was present in 122 (40.5%) and absent in 53 (44.5%) diabetic patients, it was also present in 150 (49.8%) and absent in 59 (49.6%) patients with IHD. Chest pain was present in 94 (31.2%) and absent in 37 (31.1%) patients with CAD and present in 188 (62.5%) absent in 77 (64.7%) hypertensive patients as well. There was no significant association between the comorbidities and chest pain. [Table 7].

Variables	Chest pain		p-value
	Present (n=301) No. (%)	Absent(n=119) No. (%)	
Dyslipidemia	3(1.0%)	3(2.5%)	0.236
DM	122(40.5%)	53(44.5%)	0.453
IHD	150(49.8%)	59(49.6%)	0.963
CAD	94(31.2%)	37(31.1%)	0.978
HTN	188(62.5%)	77(64.7%)	0.667

p-value obtained by Chi-square test, *significant (p<0.05)
Table 7: Association of comorbidities with chest pain among the study patients (N=420)

There was no significant relation between blood pressure with chest pain. [Table 8]

Variables	Chest pain		p-value
	Present (n=301) Mean±SD	Absent (n=119) Mean±SD	
SBP	127.9±17.9	127.1±15.5	0.655
DBP	81.±1±8.5	82.3±8.6	0.192

p-value obtained by Unpaired t-test, *significant (p<0.05)
Table 8: Relation of blood pressure with chest pain of the study patients (N=420)

Discussion

In the present study, 95 (31.6%) patients from the 50-59 years age group, followed by, 82 (27.2%) patients from the 60-69 years age group complained of chest pain among all the study subjects with male preponderance (169, 56.1%). In contrast, 37 (31.1%) patients from the 60-69 years age group did not experience chest pain, and female preponderance was seen in the patients who did not complain of chest pain. There was no significant association of chest pain with age distribution but with sex. A study by Hsia RY stated that, when stratified by age group, the prevalence of serious diagnoses increased with increasing age. (Hsia et al., 2016) Another author assessed whether the association of risk factors for developing CVD would be modified by age category. Over a mean follow-up of 1133 days, 6315 myocardial infarctions, 56 447 angina pectoris, 28079 strokes, and 56 369 HF events were recorded. Each participant was categorized as aged 20 to 49 years, 50 to 59 years, and 60 to 75 years. The relative risk reduction of hypertension in heart disease decreased from 59.2% in participants aged 20 to 49 years to 38.1% in those aged 60 to 75 years. (Kaneko et al., 2023) Concerning comorbid diseases, the maximum patients (265, 63.1%) had hypertension (HTN), followed by, (209, 49.8%) ischemic heart disease (IHD), (175, 41.7%) diabetes mellitus (DM), (131, 31.2%) coronary artery disease (CAD), and (6, 1.4%) dyslipidemia. Hypertension was diagnosed in 150 (79.8%) patients with IHD, atrial fibrillation– in 45 (23.9%), diabetes mellitus – in 36 (19.1%), 11 (5.8%), obliterating atherosclerosis– in 11 (5.8%). (Didenko et al., 2016) In another study, CAD was present in 38% of patients. Of the total cohort, 17% had a history of myocardial infarction and 23% had angina. Several conventional risk factors, including advancing age, male gender, diabetes mellitus, and smoking, were significantly associated with CAD. (Stack & Bloembergen, 2001) Among the study respondents of the present study, most of the patients (301, 71.7%) complained of chest pain. In a study by Canto, of all patients, diagnosed as having MI, 142,445 (33%) did not have chest pain on presentation to the hospital. This group of MI patients was, on average, 7 years older than those with chest pain (74.2 vs 66.9 years), with a higher proportion of women (49.0% vs 38.0%) and patients with diabetes mellitus (32.6% vs 25.4%) or prior heart failure (26.4% vs 12.3%). (Canto et al., 2000) Both type 1 and type 2 diabetes increase the risk of coronary artery disease (CAD). The reasons underlying this are largely unknown, although renal disease and the standard CAD risk factors seem important. The role of glycemic control is controversial; two studies suggest a little relationship to CAD, although others report such an association. (Orchard et al., 2023) However, these comorbid conditions (DM, HTN, IHD, CAD, dyslipidemia) did not show any significant prevalence rate in patients with angina in this current study. Although chest pain was present in 122 (40.5%) and absent in 53 (44.5%) diabetic patients, it was also present in 150 (49.8%) and absent in 59 (49.6%) patients with IHD. Chest pain was present in 94 (31.2%) and absent in 37 (31.1%) patients with CAD and present in 188 (62.5%) absent in 77 (64.7%) hypertensive patients as well in this study. Extensive epidemiological research has established diabetes, smoking, hyperlipidemia, and hypertension as independent risk factors

for future cardiac events. Because of the strength of the evidence supporting their role in the pathogenesis of CHD, these 4 risk factors have often been labeled as “conventional” risk factors. (Khot et al., 2003) However, Hypertension (26%) and Diabetes Mellitus (15%) were the two most common co-existing pathologies, along with Stroke, Respiratory Disease, and Renal Disease. (Hasan et al., 2013).

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

Conclusion

This study concluded that the mentioned comorbid conditions (DM, HTN, IHD, CAD, dyslipidemia) did not show any significant prevalence rate in patients with angina. However, some patients had one or more such conditions along with chest pain which was not statistically significant.

Funding

No funding sources

Conflict of Interest

None Declared

Ethical Approval

The study was approved by the Institutional Ethics Committee

Recommendation

Improvement of emergency care along with lifestyle modification is essential to minimize the burden of cardiac emergencies in Bangladesh. Moreover, further studies should be conducted involving a large sample size and multiple centers.

References

1. Javed, A., Aziz, S., & Raza, A. (2006). Prevalence of cad in females with hypertension and diabetes mellitus presenting with chest. *Pakistan heart journal*, 39(1-2), 9-12. Retrieved from <https://pesquisa.bvsalud.org/portal/resource/pt/emr-200414>
2. Piccirillo, J. F., Vlahiotis, A., Barrett, L. B., Flood, K. L., Spitznagel, E. L., & Steyerberg, E. W. (2008). The changing prevalence of comorbidity across the age spectrum. *Critical reviews in oncology/hematology*, 67(2), 124-32. DOI: <https://doi.org/10.1016/j.critrevonc.2008.01.013>
3. Storrow, A. B., & Gibler, W. B. (2000). Chest pain centers: diagnosis of acute coronary syndromes. *Annals of emergency medicine*, 35(5), 449-61. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/10783407/>
4. Gibler, W. B., Runyon, J. P., Levy, R. C., Sayre, M. R., Kacich, R., Hattemer, C. R., Hamilton, C., Gerlach, J. W., & Walsh, R. A. (1995). A rapid diagnostic and treatment center for patients with chest pain in the emergency department. *Annals of emergency medicine*, 25(1), 1-8. DOI: [https://doi.org/10.1016/s0196-0644\(95\)70347-0](https://doi.org/10.1016/s0196-0644(95)70347-0)

5. Kontos, M. C., Diercks, D. B., & Kirk, J. D. (2010). Emergency department and office-based evaluation of patients with chest pain. *In Mayo Clinic Proceedings*, 85(3), 284-299. DOI: <https://doi.org/10.4065%2Fmcp.2009.0560>
6. Kahn, S. E. (2000). The challenge of evaluating the patient with chest pain. *Archives of pathology & laboratory medicine*, 124(10), 1418-9. DOI: <https://doi.org/10.5858/2000-124-1418-tcoetp>
7. Canto, J. G., Shlipak, M. G., Rogers, W. J., Malmgren, J. A., Frederick, P. D., Lambrew, C. T., Ornato, J. P., Barron, H. V., & Kiefe, C. I. (2000). Prevalence, clinical characteristics, and mortality among patients with myocardial infarction presenting without chest pain. *Jama*, 283(24), 3223-9. DOI: <https://doi.org/10.1001/jama.283.24.3223>
8. Goodacre, S., Locker, T., Morris, F., & Campbell, S. (2002). How useful are clinical features in the diagnosis of acute, undifferentiated chest pain?. *Academic Emergency Medicine*, 9(3), 203-8. DOI: <https://doi.org/10.1111/j.1553-2712.2002.tb00245.x>
9. Clark, L. T., Adams-Campbell, L. L., Maw, M., Bridges, D., & Kline, G. (1989). Clinical features of patients with acute myocardial infarction presenting with and without typical chest pain: an inner city experience. *Journal of the Association for Academic Minority Physicians*, 1(1), 29-31. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/2520850/>
10. Hsia, R. Y., Hale, Z., & Tabas, J. A. (2016). A national study of the prevalence of life-threatening diagnoses in patients with chest pain. *JAMA internal medicine*, 176(7), 1029-32. DOI: <https://doi.org/10.1001/jamainternmed.2016.2498>
11. Kaneko, H., Yano, Y., Okada, A., Itoh, H., Suzuki, Y., Yokota, I., Morita, K., Fujiu, K., Michihata, N., Jo, T., Yamaguchi, S., Takeda, N., Morita, H., Node, K., Yamauchi, T., Nangaku, M., Kadowaki, T., McEvoy, J. W., Lam, C. S. P., Yasunaga, H., & Komuro, I. (2023). Age-Dependent Association Between Modifiable Risk Factors and Incident Cardiovascular Disease. *Journal of the American Heart Association*, 12(2), e027684. DOI: <https://doi.org/10.1161/jaha.122.027684>
12. Didenko, D., Rasputina, L., Mostovoy, Y., & Cherepii, N. (2016). Comorbidity in patients with IHD-the prevalence of COPD. *European Respiratory Journal* 48(suppl 60), 1119. DOI: <http://dx.doi.org/10.1183/13993003.congress-2016.PA1119>
13. Stack, A. G., & Bloembergen, W. E. (2001). Prevalence and clinical correlates of coronary artery disease among new dialysis patients in the United States: a cross-sectional study. *Journal of the American Society of Nephrology*, 12(7), 1516-23. DOI: <https://doi.org/10.1681/asn.v1271516>
14. Canto, J. G., Shlipak, M. G., Rogers, W. J., Malmgren, J. A., Frederick, P. D., Lambrew, C. T., Ornato, J. P., Barron, H. V., & Kiefe, C. I. (2000). Prevalence, clinical characteristics, and mortality among patients with myocardial infarction presenting without chest pain. *Jama*, 283(24), 3223-9. DOI: <https://doi.org/10.1001/jama.283.24.3223>
15. Orchard, T. J., Olson, J. C., Erbey, J. R., Williams, K., Forrest, K.Y., Smithline Kinder, L, Ellis, D., & Becker, D. J. (2003). Insulin resistance-related factors, but not glycemia, predict coronary artery disease in type 1 diabetes: 10-year follow-up data from the Pittsburgh Epidemiology of Diabetes Complications study. *Diabetes care*, 26(5), 1374-9. DOI: <https://doi.org/10.2337/diacare.26.5.1374>
16. Khot, U. N., Khot, M. B., Bajzer, C. T., Sapp, S. K., Ohman, E. M., Brener, S. J., Ellis, S. G., Lincoff, A. M., & Topol, E. J. (2003). Prevalence of conventional risk factors in patients with coronary heart disease. *Jama*, 290(7), 898-904. DOI: <https://doi.org/10.1001/jama.290.7.898>
17. Hasan, S. M., Khan, H. L., Chowdhury, A. W., Sabah, K. M., & Ekram, M. R. (2013). Prevalence and Pattern of Cardiac Emergencies in a Tertiary Care Hospital of Bangladesh. *Bangladesh Critical Care Journal*, 1(1), 23-6. DOI: <http://dx.doi.org/10.3329/bccj.v1i1.14361>

Copyright: ©2023 Kazi Shamim Al Mamun. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.