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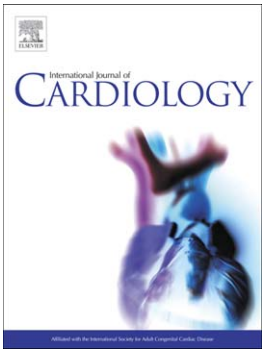
DOI:
10.1016/j.ijcard.2014.09.040



Prevalence and length of hospital stay in patients with Aortic Valve Disease is lower amongst South Asians

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PII: S0167-5273(14)01742-2
DOI: doi: 10.1016/j.ijcard.2014.09.040
Reference: IJCA 18816

To appear in: *International Journal of Cardiology*

Received date: 31 July 2014
Accepted date: 16 September 2014

Please cite this article as: Thakker Clare, Gollop Nicholas D., Carter Paul, Lavu Deepthi, Uppal Hardeep, Chandran Suresh, Potluri Rahul, Prevalence and length of hospital stay in patients with Aortic Valve Disease is lower amongst South Asians, *International Journal of Cardiology* (2014), doi: 10.1016/j.ijcard.2014.09.040

Prevalence and length of hospital stay in patients with Aortic Valve Disease is lower amongst South Asians

International Journal of Cardiology - Short Communication

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Running Title: Aortic Valve Disease, prevalence and length of hospital stay

Key word(s): Aortic valve stenosis, Length of Hospital Stay, Ethnic, South Asian

Conflict of interest statement: No conflicts of interest to declare No specific funding was received in relation to this article.

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Word Count: 962 words

Dear Editor,

Aortic valve stenosis is the most common lesion of heart valves in European and American populations with calcific aortic valve stenosis present in 2-7% of the population aged >65 years[1] and severe stenosis present in 3% over 75 years[2]. Aortic valve stenosis can have serious consequences such as increased perioperative morbidity and mortality[3] and a mortality of 75% in symptomatic patients with severe aortic stenosis[4]. Ethnicity may influence the prevalence of the condition as well as its progression; congenital bicuspid aortic valve, calcific aortic stenosis and pathological calcification are all more prevalent in black patients[5]. Progression of aortic valve calcification has also been reported to be greater in black patients[6], although other studies have also demonstrated progression in this ethnic group to be lower[7] or not affected[8]. There is therefore a limited and conflicting evidence base on the effect of ethnicity, with many previous studies excluding Asian patients, although such studies could highlight important differences risk of the condition and it's complications.

To better understand the incidence and management of aortic valve stenosis in the United Kingdom (UK) we investigated the prevalence, LOS and its predictors in black and ethnic minority patients with aortic valve stenosis in the North West of England.

We examined LOS and ethnic variations using completely anonymous data of adult patients admitted across seven hospitals across Greater Manchester (North West England) between 2000 and 2013 using the ACALM (Algorithm of Comorbidities, Associations, Length of stay and Mortality) study protocol, which uses ICD-10 diagnosis and OPCS-4 procedure codes to trace patients. The Caucasian population served as the reference ethnic group. The black and ethnic minority populations were defined as South Asian, Afro-Caribbean, Oriental and mixed race ethnicity. Data on the LOS, age, gender, ethnicity, co-morbidities and type of admission was available for all patients. The presence of a co-morbidity was defined by the presence of any of the top eight causes of mortality in the UK: ischemic heart disease, heart failure, cerebrovascular disease, lung cancer, breast cancer, dementia, chronic kidney disease, and chronic obstructive airways disease. All analyses were performed using SPSS version 20.0 and Microsoft Office Excel 2007. Such methodology has been previously used by our group and others[9-14].

During the study period, there were 929465 overnight admissions of which 4764 (0.51%) were coded for aortic valve stenosis. Patients of ethnic minority origin constituted 3.2% of aortic valve stenosis admissions and LOS was significantly shorter ($p<0.05$) in South Asian patients (but not in other ethnic minority groups)

compared to Caucasian patients with aortic valve stenosis after analysis by means of a multi-variant logistic regression model accounting for variations in age, gender and co-morbidity. Moreover, the mean age of South Asian patients with aortic valve stenosis was notably lower than those of Caucasian origin (56 v 73 years). Interestingly, aortic valve stenosis is more prevalent in Caucasian admissions than those of ethnic minority origin (Table 1).

The precise reasons for shorter LOS in South Asian patients with aortic valve stenosis are currently unknown but these findings are consistent with similar findings in previous work looking at LOS in patients with diabetes in Birmingham, UK[9], patients with acute pulmonary embolism[10] and myocardial infarction[12] in Greater Manchester, UK. Moreover, there is previous evidence to suggest that ethnic minorities may receive less support at discharge and that they may be discharged prematurely[15]. These potential inequalities require further investigation ideally via prospective cohort studies with solid quality outcomes such as adverse event rate and mortality. A limitation of our discussion is that it is based on the assumption that short LOS is related to recovery or hospital discharge as we have no data on mortality. Furthermore, we have no data on the proportion of patients undergoing aortic valve replacement and this has been shown to produce a variety of complications and different LOS according to risk factors such as age and gender[16,17]: an important point to consider given that the South Asian admissions for aortic valve stenosis were notably younger than Caucasian admissions.

Our data suggests that aortic valve stenosis is more prevalent in Caucasian admissions than those of ethnic minority origin . In accordance with this, a previous study of a United States (US) population demonstrated a lower frequency of biscuspid aortic valve and reduced aortic dimensions in African Americans compared to Caucasians[18] and in another study calcified aortic disease was 69% lower amongst African Americans[7,8]. However, the current literature on this subject conflicting, with reports of a greater risk of aortic valve disease in this patient group[5-8]. The evidence base on the influence of ethnicity is also limited, especially with respect to Asian patients with aortic valve disease, for whom the results of the present study are particularly relevant. The reasons for race being a modifier in aortic valve disease are unclear but previous studies have identified possible risk factors for degenerative aortic valve disease including, male sex, active smoking status and a history of hypertension[19]. It is possible that these risk factors may be present at different rates in Caucasian and ethnic minority populations. Moreover, recent studies have suggested that genetic loci associated with aortic valve stenosis may occur at a slightly higher frequency in the Caucasian population than in other ethnic groups[20]. However, it is difficult to draw conclusions on the prevalence of aortic valve stenosis as it is

often asymptomatic and diagnosis via echocardiogram is often made relatively late. Thus, access to health care will affect the apparent prevalence in different populations and other studies have shown this can be influenced by age and sex[21] as well as ethnic origin[22].

We believe our study highlights the need for more research into the reasons for and methods for reduction of health inequalities in multi-ethnic populations with a view to improving care for patients with aortic valve stenosis.

Table 1 – Prevalence and characteristics of admissions for patients with aortic valve stenosis according to ethnic group

Ethnicity	Aortic valve stenosis per 1000 admissions	N (%)	Mean Age (years)	M:F Ratio	% admitted as emergency	% with co-morbidity	Mean Length of Stay (days)	ODDs ratio for length of stay*
All groups	4.91	4564 (100.0)	72	1.2:1	61.7	64.7	7.7	-
Caucasian	5.65	4053 (88.8)	73	1.1:1	62.7	65.2	13.7	1
South Asian	1.07	78 (1.7)	56	2.4:1	71.8	67.9	8.0	0.982 (0.968– 0.996)
Afro-Caribbean	0.60	16 (0.4)	69	0.6:1	62.5	68.8	9.7	0.975 (0.915-1.038)
Oriental	1.02	6 (0.1)	68	2.0:1	50.0	66.7	14.0	1.010 (0.966-1.056)
Mixed	0.68	5 (0.1)	74	F=0	40.0	60.0	1.3	0.662 (0.331-1.325)
Other	1.92	39 (0.9)	69	0.8:1	71.8	71.8	12.1	1.003 (0.981-1.025)
Unknown	4.68	367 (8.0)	72	1.2:1	47.4	58.0	15.1	1.006 (0.999-1.013)

*adjusted for age, sex, co-morbidity, # statistically significant, p<0.05

Research was performed with completely anonymous data and conformed with the local ethical review/research and development policies.

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