

Comparing vitamin D deficiency induced dilated cardiomyopathy in Black African and South Asian paediatric patients – A systematic literature review

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Introduction: Dilated Cardiomyopathy (DCM) involves ventricular dilation and dysfunction, with reduced ejection fraction. It is the third leading cause of heart failure in children. An under-researched aetiology is vitamin D deficiency (VDD). If untreated, for instance due to poor screening and low clinical suspicion, which is an existing issue, it may lead to mortality. Studies often band both ethnic groups; this is perhaps inappropriate despite both having higher risk of vitamin D deficiency than Caucasians.

Aims: This review aimed to expand knowledge about VDD induced DCM in children of these ethnicities, to facilitate earlier diagnosis and better outcomes. As well as to investigate whether these ethnic groups should not be banded together in research of this condition.

Methodology: Following systematic database searches conducted on 19/10/2022, left ventricular ejection fractions (LVEF), compared with 25-hydroxyvitamin-D (25OHD) and total serum calcium values, were recorded for under-18-year-old Black African and South Asian VDD induced DCM patients. Any discrepancies between the clinical presentations of ethnic groups were investigated. Study characteristics were conveyed with a table, scatter graphs and narrative synthesis.

Results: Thirteen studies, comprising thirty-one patients, were included. Unexpected negative correlation between total serum calcium and LVEF in Black Africans was identified. Black African patients had a higher LVEF range than South Asian patients, despite similar 25OHD and total serum calcium ranges. Twenty-four patients developed heart failure, five (of seven) did not due to preventative heart failure treatment. Three patients, all South Asian, died. Clinical presentations were similar in both groups.

Conclusion: South Asians may be more susceptible to severe morbidity from a given 25OHD or total serum calcium compared to Black Africans, however this is uncertain as the case studies had low generalisability. Future research should be cautious about grouping these ethnicities. Screening and clinical suspicion should be enhanced to facilitate early management.

