Editorial

PARADIGM SHIFT IN APPROACH TO REDUCE ATHEROSCLEROTIC CARDIOVASCULAR DISEASE BURDEN

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Despite advances made in medical science, genetics, epidemiology, risk assessment, and cardiovascular imaging, Atherosclerotic Cardiovascular Disease (ASCVD) remains the number one killer globally with 17.3 million deaths worldwide and 3.16 million in Southeast Asia.[1] Newer medicine, devices, and interventional procedures have been developed, tested in different outcome trials, and recommended as practice guidelines by professional societies and organizations such as the world health organization (WHO), in situ hybridization (ISH), embryonic stem cell (ESC), American hospital association (AHA), etc.[2]

Efforts to decrease the ever-rising disease burden have fixated more on the apparent illness and less on prevention. The improvement seen in ASCVD mortality and morbidity is mostly due to timely transfer of acutely sick patients to secondary and tertiary healthcare facilities, setting up of CCUs and Stroke units, early interventions, and secondary prevention strategies that allow patients to survive the acute attack and to live longer with heart failure and disabilities.[3]

The majority of patients at high risk for ASCVD or with the manifest disease are still either untreated or inadequately treated.[4] The Framingham Heart Study, which was propelled in 1948, for the first time established the principle of cardiovascular disease risk identification and predicting future events.[5] The Multiple Risk Factor Intervention Trial (MRFIT) in which 12 866 men were followed-up for an average period of 7 years showed that predefined cardiac endpoints such as fatal or nonfatal myocardial infarction, and all-cause mortality were significantly less in the group assigned to multiple risk factor intervention versus those assigned to usual care.[6] Scandinavian Simvastatin Survival Study (4S) undertaken in 1994 followed by scores of various randomized control trials over the next two decades validated the effectiveness of statins in reducing CVD events and all-cause mortality in patients having high ASCVD risk.[7,8]

Remarkable improvements in CV outcomes were reported in reduction of cardiovascular events with Icosapent Ethyl-intervention trial (REDUCE-IT) which tested the Eicosapentaenoic acid (EPA) add up of 4g/day with statin therapy in comparison to placebo among the patients with confirmed ASCVD along with diabetes, with at least one more risk factor.[9] Further a recent, Proprotein Convertase/Subtilisin Kexin type 9 (PCSK9) that acts to regulate LDL-C in plasma has altered our consideration about lipid metabolism. Antagonism of a couple of complete human monoclonal antibodies presented PCSK9 action attained by Food and Drug Administration (FDA) in U. S. for approval to be used in humans to treat dyslipidaemias.[10]

A recent survey estimated that 41% of the adult Pakistani population has hypertension, 21% use tobacco,17.3% have high cholesterol, 21% are obese.[11] The prevalence of diabetes mellitus in Pakistan is 17.1% and in 2019 over 19 million adults in Pakistan were living with diabetes.[12] Combined these multiple ASCVD risk factors undermine any progress made through setting up tertiary care centers for the management of CVD, especially in low- and middle-income countries where ASCVD prevention has received little attention.

ASCVD can be prevented through a multifactorial approach well before it

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manifests as Angina, Myocardial infarction, Stroke, Heart Failure, or critical limb ischemia. Early identification of individuals at risk and a focus on lifestyle interventions such as adopting "Life's Simple Seven" (LS7 score)[13]

1. Quit smoking
2. A healthy diet plan
3. Regular physical activity
4. Ideal body weight
5. lower cholesterol level
6. Blood pressure
7. Fasting blood sugar

A high LS7 score ($\geq$ 5) is associated with a lower risk of future deadly or disabling cardiovascular events. Adults who are >40 years of age should have their 10-year ASCVD risk calculated and advised on adopting lifestyle changes.[14] An interdisciplinary team approach and collaboration with patients and families to adopt a healthy lifestyle, practicing and promoting healthy behaviors and eating can effectively reduce ASCVD burden.[15]

The increasing burden of CVD demands a paradigm shift in approach with more focus on primary care and prevention than on setting up expensive tertiary care hospitals. A multifaceted primary prevention approach for the high-risk population is the need of the hour. All stakeholders such as patients, health care providers, ministries of health, finance, education, and agriculture, and other regulatory bodies must join hands in efforts to reduce the ASCVD burden.

The preventive providers of the forthcoming need formal expertise and training beyond that is presently being delivered. A preparation program for primary care physicians is designed to better equip them with knowledge and skills required to impart preventative techniques to their patients aimed at achieving a healthy lifestyle which translates into a reduction in adverse cardiovascular outcomes.[16] A postgraduate fellowship or master's degree program in preventive cardiology be offered to cardiologists, internists, and public health specialists and research into finding indigenous solutions based on local and regional data.[17]

The resources needed to prevent ASCVD are far less than required to treat manifest ASCVD presenting as myocardial infarction, stroke, heart failure, or gangrene.[18]

REFERENCES

1. Rehman H, Samad Z, Mishra SR, Merchant AT, Narula JP, Mishra S, et al. Epidemiologic studies targeting primary cardiovascular disease prevention in South Asia. Indian Heart J. 2018 Sep 1;70(5):721-30. doi: 10.1016/j.ihj.2018.01.029.
2. Catapano AL, Graham I, De Backer G, Wiklund O, Chapman MJ, Drexel H,et al. 2016 ESC/EAS Guidelines for the Management of Dyslipidaemias The Task Force for the Management of Dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS) Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR). Atherosclerosis. 2016 Oct;253:281-344. doi: 10.1016/j.atherosclerosis.2016.08.018
3. Mehta NJ, Khan IA. Cardiology's 10 greatest discoveries of the 20th century. Tex. Heart Inst. J. 2002 Jan 1;29(3):164-71.
4. Fleg JL, Forman DE, Berra K, Bittner V, Blumenthal JA, Chen MA, et al. Secondary prevention of atherosclerotic cardiovascular disease in older adults: a scientific statement from the American Heart Association/ Circulation. 2013 Nov 26;128(22):2422-46. doi: 10.1161/01.cir.0000436752.99896.22
5. Tsao CW, Vasan RS. The Framingham Heart Study: past, present and future. Int J Epidemiol. 2015 Dec 21;44(6):1763-6.
6. Stamler J, Neaton JD. The multiple risk factor intervention trial (MRFIT)—importance then and now. JAMA 2008 Sep 17;300(11):1343-5. doi: 10.1093/ije/dyv336
7. Rached F, Santos RD. The role of statins in current guidelines. Curr Atheroscler Rep. 2020 Aug 8;22(9):50. doi: 10.1007/s11883-020-00861-9

8. Pedersen TR, Wilhelmsen L, Færgeman O, Strandberg TE, Thorgeirsson G, Troedsson L, et al. Follow-up study of patients randomized in the Scandinavian simvastatin survival study (4S) of cholesterol lowering. Am J Cardiol. 2000 Aug 1;86(3):257-62. doi: 10.1016/s0002-9149(00)00910-3
9. Bhatt DL, Steg PG, Brinton EA, Jacobson TA, Miller M, Tardif JC, et al. Rationale and design of REDUCE-IT: reduction of cardiovascular events with icosapent ethyl–intervention trial. Clin Cardiol. 2017 Mar 15;40(3):138-48. doi: 10.1002/clc.22692
10. Urban D, Pöss J, Böhm M, Laufs U. Targeting the proprotein convertase subtilisin/kexin type 9 for the treatment of dyslipidemia and atherosclerosis. J Am Coll Cardiol. 2013 Oct 15;62(16):1401-8. doi: 10.1016/j.jacc.2013.07.056
11. Rafique I, Saqib MAN, Munir MA, Qureshi H, Rizwanullah, Khan SA, et al. Prevalence of risk factors for noncommunicable diseases in adults: key findings from the Pakistan STEPS survey. East Mediterr Health J. 2018;24(1):33–41. doi: 10.26719/2018.24.1.33
12. Adnan M, Aasim M. Prevalence of type 2 diabetes mellitus in adult population of Pakistan: A meta-analysis of prospective cross-sectional surveys. Ann Glob Health. 2020 Jan 31;86(1):7. doi: 10.5334/aogh.2679
13. Sanchez E. Life's simple 7: vital but not easy. J Am Heart Assoc. 2018 May 17; 7:e009324. doi:10.1161/JAHA.118.009324
14. Karmali KN, Goff DC, Ning H, Lloyd-Jones DM. A systematic examination of the 2013 ACC/AHA pooled cohort risk assessment tool for atherosclerotic cardiovascular disease. J Am Coll Cardiol. 2014 Sep 9;64(10):959-68. doi: 10.1016/j.jacc.2014.06.1186
15. Freaney PM, Khan SS, Lloyd-Jones DM, Stone NJ. The role of sex-specific risk factors in the risk assessment of atherosclerotic cardiovascular disease for primary prevention in women. Curr Atheroscler Rep. 2020 Jul 16;22(9):46. doi: 10.1007/s11883-020-00864-6
16. Gibson I, Flaherty G, Cormican S, Jones J, Kerins C, Walsh AM, et al.Translating guidelines to practice: findings from a multidisciplinary preventive cardiology programme in the west of Ireland Eur J Prev Cardiol. 2014 Mar 1;21(3):366-76. doi: 10.1177/2047487313498831
17. Jennings C, Astin F. A multidisciplinary approach to prevention. Eur J Prev Cardiol. 2017 Jun 1;24(3_suppl):77-87. doi: 10.1177/2047487317709118
18. Arnett DK, Blumenthal RS, Albert MA, Buroker AB, Goldberger ZD, Hahn EJ,et al. 2019 ACC/AHA guideline on the primary prevention of cardiovascular disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines.Circulation.2019 Mar 17;140:e596-646. doi: 10.1161/CIR.0000000000000678

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