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Awareness about Cardiomyopathy among Allied Health Science Students

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Introduction: Cardiomyopathy refers to a group of myocardial diseases associated with structural changes of the heart muscles (myocardium) and impaired systolic and/or diastolic function in the absence of other heart disorders (coronary artery disease, hypertension,valvular disease, and congenital heart disease). The list of causes is extensive, ranging from familial disorders to underlying diseases and infections. Aim: To assess the knowledge level and create awareness about cardiomyopathy among allied health science students. Material and methods: This cross-sectional research was conducted with a self-administered questionnaire containing five questions distributed amongst 100 Allied Health science students. The questionnaire assessed the awareness of Cardiomyopathy , it's clinical manifestation, complications , treatment and prevention, diagnostic tools among allied health science students. The responses were recorded and analysed. Result: 95% of the students were aware about cardiomyopathy,83% of students know about the clinical manifestations of Cardiomyopathy, 78% of students know about the prevention and treatment of Cardiomyopathy ,84% of students are aware about types of Cardiomyopathy, 78% of students know about the diagnostic tools for cardiomyopathy. Conclusion: There is adequate awareness amongst AHS students about Cardiomyopathy in medical applications. However,enhanced awareness initiatives and educational programmes together with increased importance for curriculum improvements that further promote knowledge and awareness of Cardiomyopathy should be initiated for further understanding and benefits.

Keywords: Awareness, Cardiomyopathy, myocardial disease, students, Medicinal.

1. Introduction

William Harvey—a London physician—described the normal circulation in his classic monograph "De MotuCordis" (Movement of the Heart) in 1628.1 However, the link between the clinical manifestations of heart failure (HF) and structural changes in the heart was not made for 4 decades, when Richard Lower wrote that when "the parenchyma of the heart…suffers from inflammation, abscess or a wound" it may be unable to provide "a constant circulation of the blood.[1-3]

Cardiomyopathy refers to a group of myocardial diseases associated with structural changes of the heart muscles (myocardium) and impaired systolic and/or diastolic function in the absence of other heart disorders (coronary artery disease, hypertension,valvular disease, and congenital heart disease). The list of causes is extensive, ranging from familial disorders to underlying diseases and infections.[4]

Cardiomyopathies include a variety of myocardial disorders that manifest with various structural and functional phenotypes and are frequently genetic.[5]

Cardiomyopathy can make your heart stiffen, enlarged or thickened and can cause scar tissue. During recent decades, the genetics, pathophysiology and diagnosis of cardiomyopathy have advanced from the traditional methods of clinical presentation to new genetic and imaging techniques. Nevertheless, the differences in definition, classification, pathophysiological mechanisms and diagnosis are controversial issues in clinical practice.[6]

Although cardiomyopathy is asymptomatic in the early stages, symptoms are the same as those characteristically seen in any type of heart failure and may include shortness of breath, fatigue, cough, orthopnea, paroxysmal nocturnal dyspnea, and edema. Diagnostic studies include B-type natriuretic peptide levels, baseline serum chemistries, electrocardiography, and echocardiography.In 2006, the AHA classified cardiomyopathies as primary (i.e., genetic, mixed, or acquired) or secondary (e.g., infiltrative, toxic, inflammatory).[7]

When cardiomyopathy occurs, the normal muscle in the heart can thicken, stiffen, thin out, or fill with substances the body produces that do not belong in the heart muscle. As a result, the heart muscle's ability to pump blood is reduced, which can lead to irregular heartbeats, the backup of blood into the lungs or rest of the body, and heart failure.[8]

Cardiomyopathy is an important medical condition that needs prompt attention and AHS students will be required in the management of this condition during the course of treatment with this disease.[9] Hence this study was done with the aim of assessing the knowledge level and creating awareness about acute bronchitis among Allied health sciences students

2. Materials and Method:

This cross-sectional research was conducted with a self-administered questionnaire containing five questions distributed amongst 100 Allied Health science students.The students were randomly selected across various disciplines of Allied Health Sciences.The study setting was designated in the university campus.The survey instrument was a questionnaire pre tested and evaluated for validity and reliability concerns.

The questionnaire included ten questions eliciting the demographic data through open-ended responses and multiple choice questions for the other responses.The study was approved by the Institutional Ethical Committee and informed consent was obtained from the participants. The questionnaire was posted on an online platform and the identity of the respondents was kept confidential.

The questionnaire assessed the awareness of Cardiomyopathy, it's clinical manifestations, treatment, complications, and diagnostic method. The responses were recorded and analysed.There were no incomplete responses and no dropouts from the study.The final data obtained was organized,tabulated and subjected to statistical analysis.

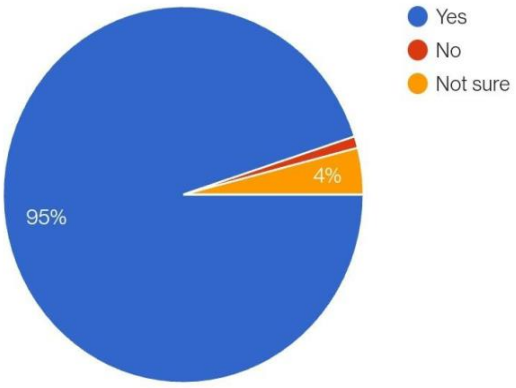
The salient questions in the study are

1. Are you aware of Cardiomyopathy?
2. Do you have any knowledge about it's clinical manifestations?
3. Are you aware of prevention and treatment of Cardiomyopathy?
4. Are you aware of complications of Cardiomyopathy?
5. Are you aware of the diagnostic method of Cardiomyopathy?

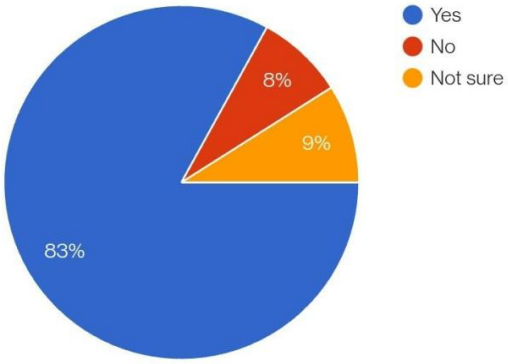
3. Result:

Among 100 Allied health science students, 95% of the students are aware about cardiomyopathy (Fig.1).83% of students know about the clinical manifestations of Cardiomyopathy (Fig.2). 78% of students know about the prevention and treatment of Cardiomyopathy (Fig.3). 84% of students are aware about types of Cardiomyopathy (Fig.4). 78% of students know about the diagnostic tools for cardiomyopathy (Fig.5).

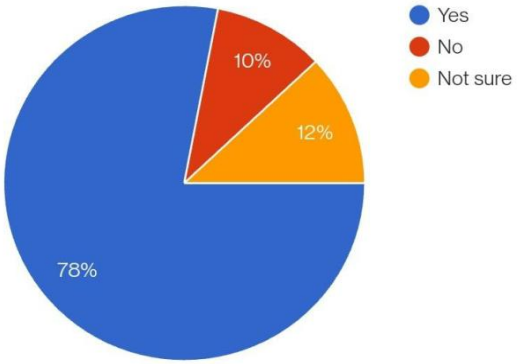
(Fig. 1) Awareness about cardiomyopathy:



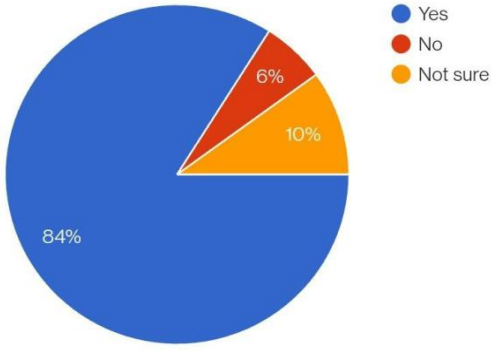
(Fig. 2) Awareness about clinical manifestations of Cardiomyopathy:



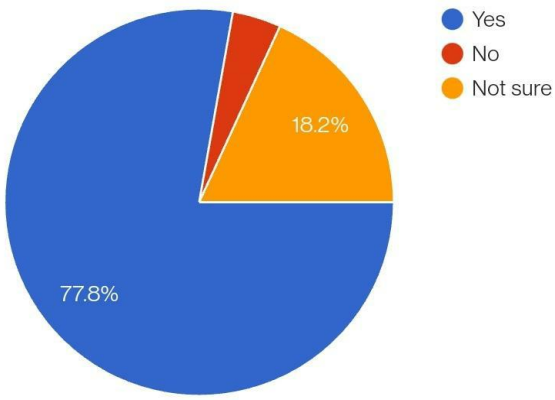
(Fig. 3) Awareness about prevention and treatment of Cardiomyopathy:



(Fig. 4) Awareness about types of Cardiomyopathy:



(Fig. 5) Awareness about diagnostic tools for cardiomyopathy:



4. Discussion:

Cardiomyopathy can make the heart stiffen, enlarged or thickened and can cause scar tissue. As a result, the heart can't pump blood effectively to the rest of the body. The cardiomyopathy heart can weaken and cardiomyopathy can lead to heart failure.[10] 95% of the students were aware about cardiomyopathy in our study. This shows the curriculum creates adequate awareness about cardiomyopathy among allied health science students.

The purpose of the survey is to analyze the awareness about Clinical manifestations of Cardiomyopathy among allied health science students.Heart failure can be ongoing (chronic), or it may start suddenly (acute). Heart failure signs and symptoms are Shortness of breath with activity or when lying down, Fatigue and weakness, Swelling in the legs, ankles and feet, Rapid or irregular heartbeat, Reduced ability to exercise, Persistent cough or wheezing with white or pink blood-tinged mucus, Swelling of the belly area (abdomen), Very rapid weight gain from fluid buildup [11]. In our study 83% of students were aware about the clinical manifestations of Cardiomyopathy among allied health science students.

Treatment of Cardiomyopathy includes both medication (Antihypertensives, diuretics, Antiarrhythmics and corticosteroid) and surgical procedures(heart transplant,septal ablation and left ventricular assist device).However, can reduce your risk of cardiomyopathy associated with heart disease by Not smoking, Managing stress, Eating a heart-healthy diet, Exercising regularly, Limiting your alcohol use.[12]. 78% of students were aware about the prevention and treatment of Cardiomyopathy in our study.

Types of Cardiomyopathy, Dilated cardiomyopathy- heart's blood-pumping chambers enlarge (dilate).Hypertrophic cardiomyopathy- heart muscle thickens, Arrhythmogenic right ventricular dysplasia (ARVD): Disease in heart muscle causes irregular heart rhythms, Restrictive cardiomyopathy- heart muscle scars, stiffens or both, Transthyretin amyloid cardiomyopathy (ATTR-CM): Abnormal protein buildup (ATTR amyloidosis) in heart's left

ventricle (primary blood-pumping chamber).[13]. In our study 84% of students were aware about the types of Cardiomyopathy among allied health sciences students.

There are various ranges of diagnostic tests for Cardiomyopathy -Ambulatory monitoring uses devices that track your heart rhythm, Cardiac CT uses X-rays to make a video of blood vessels and heart.Cardiac MRI uses radio waves and magnets to create images of heart, Echocardiogram uses sound waves to create an image of blood flow and heartbeat.

Electrocardiogram (EKG) records heart's electrical activity, Exercise stress test raises heart rate in a controlled way to see how heart responds, Cardiac catheterization uses a catheter (thin tube inserted through a blood vessel) to measure heart's blood flow and pressure, Myocardial biopsy studies a small sample of heart muscle tissue to look for cell changes.[14]. In our study 78% of students were aware about the various diagnostic tools for Cardiomyopathy among allied health science students.

5. Conclusion:

There is adequate awareness amongst AHS students about Cardiomyopathy in medical applications. However,enhanced awareness initiatives and educational programmes together with increased importance for curriculum improvements that further promote knowledge and awareness of Cardiomyopathy should be initiated for further understanding and benefits.

References

1. Bozkurt B, Colvin M, Cook J, Cooper LT, Deswal A, Fonarow GC, Francis GS, Lenihan D, Lewis EF, McNamara DM, Pahl E. Current diagnostic and treatment strategies for specific dilated cardiomyopathies: a scientific statement from the American Heart Association. Circulation. 2016 Dec 6;134(23):e579-646.
2. Benjamin EJ, Muntner P, Alonso A, Bittencourt MS, Callaway CW, Carson AP, Chamberlain AM, Chang AR, Cheng S, Das SR, Delling FN. Heart disease and stroke statistics—2019 update: a report from the American Heart Association. Circulation. 2019 Mar 5;139(10):e56-28.
3. Pearson GD, Veille JC, Rahimtoola S, Hsia J, Oakley CM, Hosenpud JD, Ansari A, Baughman KL. Peripartum cardiomyopathy: national heart, lung, and blood institute and office of rare diseases (National Institutes of Health) workshop recommendations and review. Jama. 2000 Mar 1;283(9):1183-8.
4. National Heart, Lung, and Blood Institute. Arrhythmia, National Heart, Lung, and Blood Institute, Bethesda, MA, USA, 2019.
5. Echavarría NG, Echeverría LE, Stewart M, Gallego C, Saldarriaga C. Chagas disease: chronic Chagas cardiomyopathy. Current problems in cardiology. 2021 Mar 1;46(3):100507.
6. Long B, Brady WJ, Koyfman A, Gottlieb M. Cardiovascular complications in COVID-19 [published online ahead of print April 18, 2020]. Am J Emerg Med.
7. Giustino G, Croft LB, Oates CP, Rahman K, Lerakis S, Reddy VY, Goldman M. Takotsubo cardiomyopathy in COVID-19. Journal of the American College of Cardiology. 2020 Aug 4;76(5):628-9.
8. Gammons J, Trebak M, Mancarella S. Cardiac-Specific Deletion of Orai3 Leads to Severe Dilated Cardiomyopathy and Heart Failure in Mice. Journal of the American Heart Association. 2021 Apr 20;10(8):e019486.

9. Capodanno D, Angiolillo DJ. Management of antiplatelet therapy in patients with coronary artery disease requiring cardiac and noncardiac surgery. Circulation. 2013 Dec 24;128(25):2785-98.
10. Topjian AA, De Caen A, Wainwright MS, Abella BS, Abend NS, Atkins DL, Bembea MM, Fink EL, Guerguerian AM, Haskell SE, Kilgannon JH. Pediatric post–cardiac arrest care: a scientific statement from the American Heart Association. Circulation. 2019 Aug 6;140(6):e194-233.
11. Ferri FF, editor. Ferri's Clinical Advisor 2022, E-Book. Elsevier Health Sciences; 2021 Jun 9.
12. Benhadda, Yamina, et al. "A Numerical Simulation for Cooling of Integrated Toroidal Octagonal Inductor Using Nanofluid in a Microchannel Heat Sink: NANOFLUID IN A MICROCHANNEL HEAT SINK." Metallurgical and Materials Engineering 30.1 (2024): 17-44.
13. Lipshultz SE, Sleeper LA, Towbin JA, Lowe AM, Orav EJ, Cox GF, Lurie PR, McCoy KL, McDonald MA, Messere JE, Colan SD. The incidence of pediatric cardiomyopathy in two regions of the United States. New England Journal of Medicine. 2003 Apr 24;348(17):1647-55.
14. Hernández, Ronald M., et al. "University Social Responsibility as Part of Sustainable Development in Latin America: A Study of Scientific Production in the Last 20 Years." Acta Innovations 51 (2024): 36-45.