Submission Id: 233

Title: END-USER EXPERIENCE OF THE 2012 WHF ECHOCARDIOGRAPHIC CRITERIA FOR DIAGNOSIS OF RHEUMATIC HEART DISEASE - A GLOBAL SURVEY

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Background & Aims: Many patients with Rheumatic Heart Disease (RHD) present clinically at advanced stages, challenging management in resource limited settings. Early detection, adequate management, and initiation of prophylaxis are key in reducing the burden of RHD. In 2012 the World Heart Federation (WHF) published an evidence-informed criteria for the echocardiographic diagnosis of rheumatic heart disease to standardize diagnosis in at-risk populations (2012 WHF Criteria). These criteria have since been adapted/modified to be used across a variety of clinical and research settings globally. This study aims at understanding the current use and assess expectations for the next revised criteria from the end-users' perspective.

Methods: A self-administered online survey was designed by a group of RHD experts worldwide using REDCap electronic data capture tools. The 23-questions survey contained both multiple choice and descriptive/open-ended answers. The survey was distributed simultaneously through the network of working group members for the revision of the 2012 WHF criteria and by email though the WHF channels. From there it was distributed through snowball sampling, targeting people of all professional levels expected to work with RHD. Data collection ran for 4 weeks in June 2022. Data was analyzed using R Studio (Core Team (2021)) and presented as percentages.

Results: The survey yielded a total of 269 responses from participants in 42 different countries. Among the respondents, 81% (215/266) conducted screening for RHD either as routine practice or in large screening programs, and 86% (229/267) reported working in an endemic area for RHD. The survey revealed a high awareness 87% (232/267) and application rate 80% (215/227) of the 2012 WHF criteria. After this, 35 respondents who were either not aware of or not applying the 2012 WHF criteria opted out from the survey. Of the remaining 234 respondents, 186 (79 %) indicated to use the criteria for patient care, 64 (27 %) for research purpose, and 71 (30 %) for screening programs. Throughout the survey, 54 end-users mentioned the morphological criteria as a useful component, and 17 highlighted the specific measurement of jet length/color doppler features as valuable. Some limitations were also identified: the definition and interpretation of the "Borderline" category and the subjective nature of measuring some morphological criteria which was each mentioned as problematic in the open-end answers by 19 users. Throughout the survey, 30% (70/234) at some point indicated experiencing limited access to ultrasound machines - from open-ended answers it was evident that especially utilizing the color Doppler/Continuous Wave (CW) functions was problematic. Overall, users requested a simplified version of the criteria for screening (69% - 187/213), inclusion of an algorithm to follow by 56% (131/234), and an image library by 32% (76/234). Finally, 29% (67/234) requested training programs for health workers.

Conclusions: The 2012 WHF criteria has reached a global community of users and is being applied in both screening and diagnosis in clinical practice, but there are disparities in access to ultrasound devices. While several features of the criteria are widely appreciated, the survey highlighted the need for a clearer definition of borderline disease, elimination of subjective morphological assessments, and the addition of an abbreviated criteria due to limited access to equipment. Feedback from the survey was considered in the current revision of the 2012 WHF criteria.