Peer Review File
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Reviewer A

I have a couple of comments:
Line 32: I don't understand this sentence. What has declined 34%? The mortality? The incidence of CHD? Please review. – We have clarified this to "The prevalence of CHD has declined 34.5% from 1990 due to improved availability and access to treatments. However, CHD still accounts for 32 180,624 deaths among infants (aged <1 year)"
Line 60: please review "There exists a no database". – We have changed this to "there exists no database"
Line 91: please review "Please ensure that the results and data are consistent and accurate throughout the manuscript. Statistical requirements are shown in the author instruction-"4. STATISTICAL REQUIREMENTS". – We have removed the two sentences
As you stated in your limitations, the major weakness of this paper is the uncertainty of the data on which it is supported. The CTS Net directory cannot be seen as a complete and accurate directory of all congenital cardiac surgeons in the world! It is completely voluntarily and the data is given by the members themselves. There is no independent verification if the members are really and actively CHD surgeons. Furthermore, there is no guarantee that the directory is complete! Therefore, the results of the study are only assumptions in a scientific setting.
Furthermore, not only the surgeon needs to be available for starting a successful CHD training. Other specialists like nurses, intensive-care specialists, anesthesiologists, perfusionists and cardiologists are extremely important. - We acknowledge that the CTSNet directory has its limitations including the fact that the data is not independently verified nor validated. CTSNet partially overcomes this by allowing 25 independent societies, including EACTS, STS, and AATS to review and revise the registry as required. Additionally, individual surgeons have the opportunity to contribute and update their own information on CTSNet. While we agree that the data may not be entirely exhaustive or independently verified, it provides a unique insight into the density and distribution of congenital cardiac surgeons in relation to the burden of CHD in different regions. Our study aims to utilize this data as a means of understanding broader trends and patterns within the field. Despite these constraints, we believe that our findings contribute to the ongoing dialogue within the scientific community and provide a foundation for further research in this area.

Another problem is the material needed. Medical equipment is expensive and not everywhere available. Furthermore, most equipment needs regular service and if deficient additional spare parts. - We recognize the challenges in provision of CHD interventions L&LMIC is not only skilled staffing, but also physical resources that include space (such as theatre, ICU) and specialised equipments and materials in theatre, cardiopulmonary bypass machine, inhaled NO etc. The cost and availability of medical equipment and this is something that we could not comprehensively cover in our article. We aimed to acknowledge these challenges by contextualizing our findings within the broader socioeconomic and infrastructural landscape of the various regions. We recognize that access to medical equipment varies across different settings and our study seeks to shed light on the disparities and limitations that exist in this

regard. We believe that by highlighting these challenges, our study can contribute to a more informed discussion on strategies to improve access to essential medical equipment, whether through targeted investments, technology transfer initiatives, or other collaborative efforts. However, further studies are definitely required to holistically cover the challenges in setting up a CHD centre in a resource-constrained environment.

Reviewer B

This is a very interesting paper and it adds important information to the discussion of providing adequate care to all children with congenital heart disease worldwide. The limitations of the study is the data source, since the data in CTSnet are not complete, not up to date and to some extend not correct. For example, CTS net lists 150 pediatric heart surgeons in Germany whereas 50 is a realistic number based on the number of surgeons who own a certificate for congenital heart surgery of the German society for thoracic and cardiovascular surgery. Some data of surgeons are not up to date since they moved to other countries, are represented double, even in the same institution or are not in active practice any more. One country with at least one pediatric heart surgeon with an annual activity of 150 cases is missing completely (Turkmenistan). However, you address all limitations in the discussion. You cite Zain et al., 2019 who reports the cost of sending a cardiac surgical team to operate on 10-20 children in LMICs is equal to sending a single patient to HIC centers for their surgical care. This may be true if the costs in the HIC is equal to the cost of a regular citizen plus expenses on travel and accommodation. You also mentioned Mecenat cardiaque. In my opinion the cost for treatment of a single patient in France is much lower than the cost of sending a cardiac surgical team to operate in LMICs. I enjoyed reading your manuscript very much. - We acknowledge the limitations associated with the data source utilised in our study, particularly regarding the completeness, accuracy, and timeliness of the information available on CTSNet. Your points regarding discrepancies in the number of listed pediatric heart surgeons in Germany and the absence of data for certain regions such as Turkmenistan are duly noted. These challenges underscore the need for improved data collection and verification mechanisms in the field, which is a topic we have addressed in the discussion section of our manuscript.