Secondary preventive care for cardiovascular diseases in Bangladesh

A national survey

Alam, Sayed Ibn; Uddin, Jamal; Khaled, Fakhru1 Islam; Hoque, Harisul; Adhikary, Dipak K.; Karim, Rezaul; Rashid, M. A.; Banerjee, Sajal Krishna; Taylor, Rod S.; Zwisler, Ann Dorthe Olsen; Grace, Sherry L.

Published in:
Global Heart

DOI:
10.5334/gh.953

Publication date:
2021

Document version:
Final published version

Document license:
CC BY

Citation for published version (APA):
Alam, S. I., Uddin, J., Khaled, F. I., Hoque, H., Adhikary, D. K., Karim, R., Rashid, M. A., Banerjee, S. K., Taylor, R. S., Zwisler, A. D. O., & Grace, S. L. (2021). Secondary preventive care for cardiovascular diseases in Bangladesh: A national survey. Global Heart, 16(1), [31]. https://doi.org/10.5334/gh.953

Go to publication entry in University of Southern Denmark's Research Portal

Terms of use
This work is brought to you by the University of Southern Denmark.
Unless otherwise specified it has been shared according to the terms for self-archiving. If no other license is stated, these terms apply:

- You may download this work for personal use only.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying this open access version.

If you believe that this document breaches copyright please contact us providing details and we will investigate your claim. Please direct all enquiries to puresupport@bib.sdu.dk

Download date: 15. Jul. 2021
Secondary Preventive Care for Cardiovascular Diseases in Bangladesh: A National Survey

Sayed Ibn Alam1, Jamal Uddin2, Fakhrul Islam Khaled3, Harisul Hoque3, Dipak K. Adhikary3, Rezaul Karim4, M. A. Rashid4, Sajal Krishna Banerjee5, Rod S. Taylor5, Ann-Dorthe Olsen Zwisler1 and Sherry L. Grace6

1 REHPA – Danish Knowledge Centre for Rehabilitation and Palliative Care, Odense University Hospital and University of Southern Denmark, Nyborg, DK
2 Physiotherapy and Cardiac Rehabilitation Unit, Ibrahim Cardiac Hospital and Research Institute, Dhaka, BD
3 Department of Cardiology, University Cardiac Center, Bangabandhu Sheikh Mojib Medical University, Dhaka, BD
4 Department of Cardiology, Ibrahim Cardiac Hospital and Research Institute, Dhaka, BD
5 MRC/CSO Social and Public Health Sciences Unit & Robertson Centre for Biostatistics, Institute of Health and Wellbeing, University of Glasgow, Glasgow, GB
6 York University & KITE-University Health Network, University of Toronto, CA

Corresponding author: Ann-Dorthe Olsen Zwisler (Ann.Dorthe.Olsen.Zwisler@rsyd.dk)

Keywords: Cardiac rehabilitation; secondary prevention; low- and middle-income countries; health services; health policy

The prevalence of cardiovascular diseases (CVD) is increasing worldwide, particularly in low- and middle-income countries (LMICs) [1]. Due to lack of preventive care and screening for CVD risk factors, people in LMICs often develop CVD at a younger age and have poorer outcomes [2]. CVD is major cause of disability in the LMIC of Bangladesh for example, accounting for 13% of all disability-adjusted life years (DALYs) lost [3].

The International Council of Cardiovascular Prevention and Rehabilitation (ICCPR) performed an audit of cardiac rehabilitation (CR) availability globally in 2017. It identified only one program in Bangladesh [4], despite over 400,000 incident ischemic heart disease cases annually [3]. While acute care for CVD including percutaneous coronary interventions and coronary artery bypass graft surgery is available in Bangladesh both in the public and private sectors [5], it is unfortunate such life-saving [6] and cost-efficient chronic care services are not.

To augment CR capacity, there is a need to identify the cardiac centers in Bangladesh that could deliver it, and to understand what secondary prevention is currently being offered. To our best knowledge, no study has yet established this. Therefore, the purpose of this study was to establish the availability and extent of cardiac secondary prevention services in Bangladesh.

Data for this cross-sectional study was collected between August and October 2019 using Epidata. A list of all medical colleges, institutes and specialized cardiac hospitals both in the government and private sectors was collated from the Bangladesh Medical and Dental Council website [7] and through contacts of the authors. The inclusion criterion was that the center has a cardiology/cardiac surgery department; centers with only neonatal cardiac departments were excluded.

Cardiologists, cardiovascular surgeons, or other physicians treating cardiac patients from eligible centers were contacted about the survey by phone call. Where there was a positive response, a consent form and questionnaire were (e)mailed, or a face-to-face interview was performed where possible, based on preference. Non-responders were contacted via email and/or phone. An alternative physician was contacted from the same center if a response was not received within a further two weeks.

Survey items were used from ICCPR’s global CR program survey [8], assessing the nature of the clinical center, CVD risk factors assessed, as well as secondary prevention components delivered. Descriptive statistics were calculated using STATA 16.1.

As shown in Supplemental Figure 1, there were 106 centers, of which 79.2% were successfully contacted. Nineteen did not meet inclusion criteria (so 77.4% of the potential centers did, suggesting there could be approximately 106 * 0.774 = 82 acute cardiac centers in the country). The response rate was 80%.
Respondents were predominantly physicians (cardiologist, cardiac surgeon, registrar). Centers were mostly located in urban (n = 32; 62.7%) and suburban (n = 18; 35.2%) areas. In the capital city Dhaka, there were 26 centers that offered cardiac services, but in 14 out 20 districts, there was no specialized cardiac care (Supplemental Figure 2). In 98% of centers (n = 50), patients pay out-of-pocket for their care. No centers had electronic patient records.

In terms of risk factor assessment (Supplemental Table 1), blood pressure, tobacco use, cholesterol, and diabetes assessment were undertaken by most of the centers. Physical inactivity, diet, and anthropometric assessment was undertaken by ≥80%. However, anxiety and depression assessment were less frequent, with sleep apnea least commonly assessed.

For secondary preventive care (Table 1), most centers offered management of identified risk factors and nutrition counseling. Many offered psychological counseling. Smoking cessation treatment was scanty available.

Our national survey of all medical college hospitals, institutes and specialized hospitals reveals grossly insufficient acute and chronic CV care capacity in Bangladesh [9]. About half of all centers were located in greater Dhaka (capital city), with 70% of districts having no specialized CVD care. Reported rates of screening for the main CV risk factors was quite high, but use of structured exercise was low. Furthermore, although consumption of tobacco is high in Bangladesh [10] and its use is associated with greater mortality in CVD, smoking cessation interventions were offered infrequently.

The clinical and policy implications of this audit of secondary preventive care are many. It is clear that availability of CVD secondary preventive care needs to be augmented in Bangladesh, starting first with regions where none exists. Results confirmed there remains only one CR program in Bangladesh. If we assume based on ICCPR’s audit that each CR program could treat 400 patients/year [4], and given the incidence of CVD in Bangladesh [3], approximately 1,000 more programs would be needed across the country. Overcoming barriers at the healthcare system, healthcare professional, and patient (i.e., accessibility, affordability) levels is necessary. Efforts to increase the number of CR programs could include approaching local institutions to expand their services or establish new centers.

Table 1: Cardiovascular secondary prevention services/care delivered by Bangladesh cardiology centers.

| Service                                      | n  | %     |
|----------------------------------------------|----|-------|
| Individual consultation with a physician     | 51 | 100.0 |
| Individual consultation with a nurse         | 0  | 0.0   |
| Exercise stress test                         | 34 | 66.6  |
| Other functional capacity test               | 7  | 13.7  |
| Assessment of strength (e.g., handgrip)      | 9  | 17.6  |
| Assessment for comorbidities                 | 42 | 82.3  |
| Exercise prescription                        | 2  | 3.9   |
| Physical activity counseling                 | 50 | 98.0  |
| Supervised exercise training                 | 1  | 1.9   |
| Heart rate measurement training/exercise intensity assessment | 1  | 1.9   |
| Resistance training                          | 0  | 0.0   |
| Management of cardiovascular risk factors    | 48 | 94.1  |
| Prescription and/or titration of secondary prevention medications | 43 | 84.3  |
| Nutrition counseling                         | 48 | 94.1  |
| Psychological counseling                     | 43 | 84.3  |
| Stress management/Relaxation techniques      | 31 | 60.7  |
| Smoking cessation sessions/classes           | 3  | 5.8   |
| Vocational counseling/support for return-to-work | 19 | 37.2  |
| Communication of patient assessment results with their primary care provider | 0  | 0.0   |
| Follow-up after as outpatient                | 41 | 80.3  |
| Other                                        | 0  | 0.0   |
philanthropists, professional bodies, and government to introduce legislation. Indeed, our group, comprised of multiple stakeholders, is working to secure funding to validate a cross-cultural adaptation of technology-based CR established as effective in higher-resource settings [11]. ICCPR has a training certification program to augment CR human resource capacity (https://globalcardiacrehab.com/Certification), which has been successfully implemented across India (1000 physicians). This course is suitable for multiple professions involved in CVD secondary prevention, and given there was little consultation with nurses, this may be an important area to start [2].

Limitations of this study must be acknowledged. The survey was conducted in English, which is the language used in medical school, but not the first language spoken in the country. Second, self-reported data is prone to error; we did not visit each center to verify responses or verify data from a second healthcare professional at each institution. Finally, we did not assess CVD care that may be assessed in outpatient settings, community, or primary care.

In conclusion, despite availability of advanced cardiac care technology, CV secondary prevention is insufficiently available both in government and private hospitals in Bangladesh. Most districts/divisions had no specialized cardiac care, as most were located in the capital Dhaka. While the available acute cardiac centers assessed the main risk factors, there is a need to deliver more tobacco cessation interventions. There remains only one CR program in the entire country. We must advocate to policymakers for CR to reduce the CVD burden in Bangladesh.

Data Accessibility Statement
Data used in the research project have not been made available because this was not outlined at the time of research ethics submission, and respondents were not asked to consent to make the data available online. Moreover, given the small sample sizes in most regions, privacy could be breached. However, the corresponding author will consider reasonable requests for data from established investigators with appropriate approvals, to provide the data in a non-identifiable manner.

Additional Files
The additional files for this article can be found as follows:

- **Supplemental Figure 1.** Flow diagram depicting identification of cardiac centres and response rate. DOI: https://doi.org/10.5334/gh.953.s1
- **Supplemental Figure 2.** Responding center location by Bangladesh district. DOI: https://doi.org/10.5334/gh.953.s2
- **Supplemental Table 1.** Cardiovascular disease risk factors assessed by cardiology centres. DOI: https://doi.org/10.5334/gh.953.s3

Ethics and Consent
This study was approved by the research ethics board from Ibrahim Cardiac Hospital & Research Institute. Written consent was secured from all respondents.

Funding Information
REHPA – Danish Knowledge Centre for Rehabilitation and Palliative Care, Denmark and University of Exeter, United Kingdom has jointly funded the study through institutional seeding money.

Competing Interests
The authors have no competing interests to declare.

Author Contribution
ADZ and RST secured funding. ADZ, JU, SIA, and SLG finalized the survey. JU and SIA secured ethics approval. FIK, HH, DKA, RK, MAR, and SKB facilitated data collection. JU, FIK, and SIA entered and analyzed the data. SIA drafted the article along with SLG. All authors, particularly ADZ and RST critically revised the manuscript for important intellectual content and approved the final version.

References
1. World Health Organization. Cardiovascular diseases (CVDs) 2017 [updated 17 May 2017. (Available from: https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)).
2. **Gupta R, Yusuf S.** Challenges in management and prevention of ischemic heart disease in low socio-economic status people in LMICs. *BMC Medicine.* 2019; 17(1): 209. DOI: https://doi.org/10.1186/s12916-019-1454-y

3. **Global Health Data Exchange.** Global Health Data Exchange: Institute for Health Metrics and Evaluation; 2020 (Available from: http://ghdx.healthdata.org/gbd-results-tool).

4. **Turk-Adawi K, Supervia M, Lopez-Jimenez F, Pesah E, Ding R, Britto RR, et al.** Cardiac rehabilitation availability and density around the globe. *E Clinical Medicine.* 2019; 13: 31–45. DOI: https://doi.org/10.1016/j.eclinm.2019.06.007

5. **Islam AM, Majumder A.** Coronary artery disease in Bangladesh: A review. *Indian Heart Journal.* 2013; 65(4): 424–35. DOI: https://doi.org/10.1016/j.ihj.2013.06.004

6. **Anderson L, Oldridge N, Thompson DR, Zwisler A-D, Rees K, Martin N, et al.** Exercise-based cardiac rehabilitation for coronary heart disease: Cochrane systematic review and meta-analysis. *Journal of the American College of Cardiology.* 2016; 67(1): 1–12. DOI: https://doi.org/10.1016/j.jacc.2015.10.044

7. **Bangladesh Medical & Dental Colleges and Dental Council.** New list of Recognized Medical & Dental Colleges and Dental Units (Govt. & Non-Govt.) 2017–2018 (Available from: https://www.bmdc.org.bd/about-college-n?fbclid=IwAR22kCA74gqd6-X_1DLZD48ecUy4ijWKdQQKrfSo9YwLj0Z99j973THpJMq).

8. **Supervia M, Turk-Adawi K, Lopez-Jimenez F, Pesah E, Ding R, Britto RR, et al.** Nature of cardiac rehabilitation around the globe. *E Clinical Medicine.* 2019; 13: 46–56. DOI: https://doi.org/10.1016/j.eclinm.2019.06.006

9. **Zilla P, Yacoub M, Zühkle L, Beyerdorf F, Sliwa K, Khubulava G, et al.** Global unmet needs in cardiac surgery. *Global Heart.* 2018; 13(4): 293–303.

10. **World Health Organization.** Global adult tobacco survey: Bangladesh Report 2009. 2009.

11. **Taylor RS, Hayward C, Eyre V, Austin J, Davies R, Doherty P, et al.** Clinical effectiveness and cost-effectiveness of the Rehabilitation Enablement in Chronic Heart Failure (REACH-HF) facilitated self-care rehabilitation intervention in heart failure patients and caregivers: Rationale and protocol for a multicentre randomised controlled trial. *BMJ Open.* 2015; 5(12). DOI: https://doi.org/10.1136/bmjopen-2015-009994