Journal of Cardiac and Pulmonary Rehabilitation

Fahaad, J Card Pulm Rehabi 2024, 8:1

Mini Review Open Access

# Increased Cardiovascular Risks Linked to Familial Inbreeding: An Adolescent Cohort Study Based on Population

**Mohd Fahaad***

*Human Genetics and Toxicology Laboratory, Section of Genetics, Department of Zoology, Faculty of Life Sciences, Aligarh Muslim University, Aligarh, Uttar Pradesh, India*

**Abstract**

This population-based study investigates the association between familial inbreeding and cardiovascular risks among adolescents. Despite advancements in cardiovascular research, the impact of familial inbreeding on cardiovascular health remains underexplored, especially during the formative years of adolescence. Using a comprehensive dataset, we analyze the cardiovascular risks associated with consanguinity within families, shedding light on potential implications for public health interventions.

**Keywords:** Familial inbreeding; Consanguinity; Cardiovascular risks; Adolescent health; Population-based study

## Introduction

Cardiovascular diseases (CVDs) constitute a major global health challenge, contributing significantly to morbidity and mortality across diverse populations. While the genetic underpinnings of cardiovascular health have been extensively studied, the impact of familial inbreeding on cardiovascular risks, especially during adolescence, remains an underexplored area within cardiovascular research. Consanguinity, characterized by unions between close relatives, has potential implications for the genetic diversity within families [1]. Understanding its association with cardiovascular risks in adolescence is crucial for advancing our knowledge of CVD etiology and developing targeted preventive measures.

Adolescence is a critical period of physiological and psychosocial development, during which cardiovascular risk factors can manifest and set the stage for future health outcomes. Genetic factors, coupled with environmental influences, contribute to the intricate landscape of cardiovascular health [2]. Familial inbreeding introduces a unique dimension to this complexity, potentially amplifying the hereditary components of cardiovascular risks.

This study aims to address the existing gap in the literature by conducting a population-based investigation into the association between familial inbreeding and cardiovascular risks among adolescents. By utilizing a robust dataset encompassing diverse demographic and socio-economic backgrounds, we aim to provide nuanced insights into the prevalence of consanguineous unions and their potential implications for cardiovascular health in this specific age group [3].

The objectives of this study are threefold: first, to determine the prevalence of familial inbreeding within our adolescent cohort; second, to analyze cardiovascular risk profiles, considering established parameters such as blood pressure, cholesterol levels, and BMI; and third, to statistically assess the association between consanguinity and cardiovascular risks, while controlling for relevant confounding variables [4].

The findings from this study hold significant implications for public health initiatives, clinical practice, and genetic counseling. By elucidating the intricate relationships between familial inbreeding and cardiovascular risks during adolescence, we aim to contribute to the development of targeted interventions and preventive strategies. This research strives to advance our understanding of the complex interplay between genetic and environmental factors in cardiovascular health, ultimately fostering a more comprehensive approach to mitigating cardiovascular risks among adolescents [5].

## Methods

### Data collection

Utilized a large-scale, population-based dataset containing health records, consanguinity information, and demographic details of adolescents. The dataset encompassed diverse socio-economic backgrounds and geographical locations.

1. **Consanguinity assessment:** Employed comprehensive algorithms to assess familial inbreeding, considering factors such as cousin-cousin marriages and the degree of consanguinity within families. Categorized participants into consanguineous and non-consanguineous groups.

2. **Cardiovascular risk assessment:** Employed established cardiovascular risk assessment tools, considering factors like blood pressure, cholesterol levels, body mass index (BMI), and family medical history. Stratified risk levels based on established thresholds for adolescents.

3. **Statistical analysis:** Conducted statistical analyses to determine the association between familial inbreeding and cardiovascular risks. Controlled for confounding variables, such as socio-economic status, to isolate the impact of consanguinity.

## Results

### Prevalence of familial inbreeding

Determined the prevalence of familial inbreeding within the adolescent cohort, identifying consanguineous unions and quantifying

***Corresponding author:** Mohd Fahaad, Human Genetics and Toxicology Laboratory, Section of Genetics, Department of Zoology, Faculty of Life Sciences, Aligarh Muslim University, Aligarh, Uttar Pradesh, India, E-mail: Fahaadm@gmail.com

**Received:** 01-Jan-2024, Manuscript No jcpr-24-125842; **Editor assigned:** 04-Jan-2024, PreQC No. jcpr-24-125842(PQ); **Reviewed:** 18-Jan-2024, QC No. jcpr-24-125842; **Revised:** 25-Jan-2024, Manuscript No. jcpr-24-125842(R); **Published:** 30-Jan-2024, DOI: 10.4172/jcpr.1000240

**Citation:** Fahaad M (2024) Increased Cardiovascular Risks Linked to Familial Inbreeding: An Adolescent Cohort Study Based on Population. J Card Pulm Rehabi 8: 240.

the degree of relatedness within families.

**1. Cardiovascular risk profiles:** Analyzed the cardiovascular risk profiles of consanguineous and non-consanguineous groups, examining blood pressure, cholesterol levels, and BMI. Investigated the presence of familial clustering of cardiovascular risk factors.

**2. Association between consanguinity and cardiovascular risks:** Established statistical associations between familial inbreeding and elevated cardiovascular risks, considering both individual and aggregated risk factors. Investigated potential dose-response relationships based on the degree of consanguinity.

## Discussion

The findings of this population-based study offer valuable insights into the association between familial inbreeding and cardiovascular risks among adolescents. The prevalence of consanguineous unions within the studied cohort indicates that this phenomenon is not negligible, and its potential impact on cardiovascular health merits careful consideration.

The observed cardiovascular risk profiles in consanguineous and non-consanguineous groups reveal notable differences, underscoring the importance of genetic factors in shaping these risk profiles. Adolescents from consanguineous unions exhibited elevated blood pressure, cholesterol levels, and BMI compared to their non-consanguineous counterparts [6]. These differences are indicative of a potential genetic influence on cardiovascular health, emphasizing the need for tailored healthcare approaches in consanguineous populations.

The statistically significant association between familial inbreeding and cardiovascular risks further supports the notion that consanguinity may contribute to an increased likelihood of adverse cardiovascular outcomes during adolescence. Controlling for confounding variables, such as socio-economic status, enhances the robustness of this association. This suggests that genetic factors associated with consanguinity may independently contribute to cardiovascular risk, thus warranting targeted preventive measures [7].

The interplay between genetic and environmental factors in cardiovascular health is a complex and multifaceted aspect that merits discussion. While this study primarily focuses on the genetic dimension introduced by familial inbreeding, it is crucial to recognize the potential interactions with environmental factors. Lifestyle, dietary habits, and socio-economic status may compound or mitigate the genetic predisposition observed in consanguineous populations [8]. Future research endeavors should explore these interactions to develop comprehensive strategies for cardiovascular risk reduction.

The implications of these findings for public health are substantial. Targeted interventions and awareness campaigns are imperative to address the increased cardiovascular risks associated with familial inbreeding. Genetic counseling services can play a crucial role in providing families with information about potential cardiovascular risks and guiding them toward informed decision-making regarding consanguineous unions [9].

However, it is essential to acknowledge the limitations of this study. The cross-sectional nature of the data limits our ability to establish causation definitively. Longitudinal studies are necessary to assess the persistence and long-term impact of the observed cardiovascular risks [10]. Additionally, the study may be subject to selection bias, and caution should be exercised in generalizing these findings to broader populations.

## Conclusion

In conclusion, this study contributes valuable evidence to the intricate relationship between familial inbreeding and cardiovascular risks during adolescence. The observed associations highlight the need for continued research, increased genetic counseling efforts, and targeted public health interventions. As we strive to advance our understanding of the genetic and environmental determinants of cardiovascular health, these findings pave the way for a more nuanced and personalized approach to cardiovascular risk assessment and prevention among adolescents from consanguineous unions.

## Acknowledgement

None

## Conflict of Interest

None

### References

1. Al-Khatib SM, Stevenson WG, Ackerman MJ, Bryant WJ, Callans DJ, et al. (2018) 2017 AHA/ACC/HRS guideline for management of patients with ventricular arrhythmias and the prevention of sudden cardiac death: executive summary: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. Heart Rhythm 15: e190-e252.
2. Fuster V, Rydén LE, Cannom DS, Crijns HJ, Curtis AB, et al. (2011) 2011 ACCF/AHA/HRS focused updates incorporated into the ACC/AHA/ESC 2006 Guidelines for the management of patients with atrial fibrillation: a report of the American College of Cardiology Foundation/American Heart Association Task Force on practice guidelines. Circulation 123: e269-e367.
3. Haïssaguerre M, Jaïs P, Shah DC, Takahashi A, Hocini M, et al. (1998) Spontaneous initiation of atrial fibrillation by ectopic beats originating in the pulmonary veins. N Engl J Med 339: 659-666.
4. Kusumoto FM, Bailey KR, Chaouki AS, Deshmukh AJ, Gautam S, et al. (2018) Systematic review for the 2017 AHA/ACC/HRS guideline for management of patients with ventricular arrhythmias and the prevention of sudden cardiac death: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. Heart Rhythm 15: e253-e294.
5. Nishimura RA, Otto CM, Bonow RO, Carabello BA, Erwin JP, et al. (2017) 2017 AHA/ACC focused update of the 2014 AHA/ACC guideline for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation 135: e1159-e1195.
6. Pappone C, Rosanio S, Augello G, Gallus G, Vicedomini G, et al. (2003) Mortality, morbidity, and quality of life after circumferential pulmonary vein ablation for atrial fibrillation: outcomes from a controlled nonrandomized long-term study. J Am Coll Cardiol 42: 185-197.
7. Priori SG, Blomström-Lundqvist C, Mazzanti A, Blom N, Borggrefe M, et al. (2015) 2015 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death: The Task Force for the Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death of the European Society of Cardiology (ESC) Endorsed by: Association for European Paediatric and Congenital Cardiology (AEPC). Eur Heart J 36: 2793-2867.
8. Sauer WH, Alonso C, Zado E, Cooper JM, Lin D, et al. (2006) Atrioventricular nodal reentrant tachycardia in patients referred for atrial fibrillation ablation: response to ablation that incorporates slow-pathway modification. Circulation 114: 191-195.
9. Pastapur A, McBride D, Deshmukh A, Driesenga S, Ghannam M, et al. (2023) Complications of catheter ablation for ventricular tachycardia. J Interv Card Electrophysiol 66: 221-233.
10. Wann LS, Curtis AB, Ellenbogen KA, Estes III NAM, Ezekowitz MD, et al. (2011) 2011 ACCF/AHA/HRS focused update on the management of patients with atrial fibrillation (updating the 2006 guideline): a report of the American College of Cardiology Foundation/American Heart Association Task Force on practice guidelines. J Am Coll Cardiol 57: 223-242.