

CARDIO ROUNDS NEWSLETTER

Volume 2| Issue 6| 2023

IN THIS ISSUE

Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you “Cardio rounds” which contains latest and interesting news in the field of Cardiology

- **A retrospective study to assess the Impact of Socio-demographic Characteristics on Time in Outpatient Cardiology Clinics**
- **Preeclampsia in Daughters Is Associated with CVD in Parents**
- **Dietary management of patients at high risk for cardiovascular disease**
- **A Case of Takotsubo Cardiomyopathy in a Patient with Known Coronary Artery Disease**

A retrospective study to assess the Impact of Socio-demographic Characteristics on Time in Outpatient Cardiology Clinics

Introduction: Time spent accessing healthcare is an important measure of service quality and strain, as patients wait in multiple settings in the community for primary care, specialist and allied health appointments, and in waiting rooms in emergency and outpatient clinics¹. Time spent waiting for health care presents a potential blockade to health system access and appointment. Patients wait at multiple points of their interaction with health systems. Waiting times for elective surgery and ED care are a regularly included key performance indicator for health services. Factors that influence various types of waiting times may be dissimilar and may have various impacts². As Patient satisfaction is considered an important dimension of the quality of health care. There are two important determinants of contentment are how long the patient waits to see the clinician and the duration of the consultation³. The objective of this study is to assess the impact of socio-demographic characteristics on time in outpatient cardiology clinics.

Method: A Retrospective study conducted in cardiology clinic across 3 public hospitals between 2014 and 2019. Data related to age, gender, Indigenous status, country of birth, language spoken at home, number of comorbidities, and postcode were collected. By measuring the difference between time arrived and time departed total clinic time was calculated which is a convenience measure taken by administration staff as part of the usual clinic workflow. A cox proportional hazards model was used, adjusting for visit type, clinic, and referral source.

Results: A total of 22367 patients were included in which Only 7823 (35.0%) were born in Australia and 8452 (37.8%) were in the lowest Socio economic status (SES) quintile. Median total clinic time was 84min (IQR 58-130). New patients and those referred from the emergency department were the most likely to spend longer in clinic Those of lower SES spent less time in clinic irrespective of their age, gender, number of comorbidities, country of birth or language spoken at home. However, after adjustment for visit type, clinic, and referral source, there was no interaction between SES and any of the identified demographic. Patients of lower SES were more likely to attend follow-up appointments, clinics with short clinic time and be referred from sources other than the emergency department, compared to patients of higher SES in the unadjusted model, low SES patients spent less time in clinic than those of high SES as shown in figure 2.

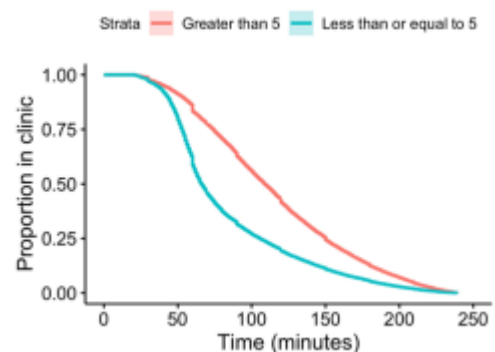


Figure 1 Socio economic status (IRSD ≤ 5 vs >5) and time leaving clinic

Discussion:

In this study, lower SES patients were more likely to attend follow-up appointments and clinics with smaller waits. It is found that lower SES patients had shorter consult times, which was the primary driver for a shorter total clinic time and these results were supported by the study conducted by Britt et.al⁴.

Conclusion: Study found that accessing healthcare presents an important time burden for patients at all levels of the health system and older patients spent longer in clinic, but no change for low SES or other demographically disadvantaged patients was identified.

Reference:

1. McIntyre D, Marschner S, Thiagalingam A, Pryce D, Chow CK. Impact of Socio-demographic Characteristics on Time in Outpatient Cardiology Clinics: A Retrospective Analysis. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*. 2023 Mar; 60:00469580231159491.
2. McIntyre D, Chow CK. Waiting Time as an Indicator for Health Services Under Strain: A Narrative Review. *Inquiry*. 2020 Jan-Dec; 57:46958020910305.
3. Patwardhan A, Davis J, Murphy P, Ryan SF. Comparison of waiting and consultation times in convenient care clinics and physician offices: a cross-sectional study. *Journal of Primary Care & Community Health*. 2013 Apr;4(2):124-8.
4. Britt HC, Valenti L, Miller GC. Determinants of consultation length in Australian general practice. *Med J Aust*. 2005;183(2):68-71. doi:10.5694/j.1326-5377.2005.tb06924.x

Study found that accessing healthcare presents an important time burden for patients at all levels of the health system and older patients spent longer in clinic, but no change for low SES or other demographically disadvantaged patients was identified

Preeclampsia in Daughters Is Associated with CVD in Parents

Introduction:

Women with a history of preeclampsia have greatly amplified risks of cardiovascular disease compared with women without the history¹. As World health organization represents preeclampsia (PE) is an important problem in obstetrics, affecting 2–8% of pregnancies and is the most common causes of maternal morbidity and mortality². Physiological pregnancy is characterized by high blood volume, low vascular resistance, and blood pressure decrease, especially in the first and second trimesters. low circulating blood volume, high blood pressure, and high vascular resistance were observed in PE². Increased risks of ischemic heart disease and cerebrovascular disease events and overall CVD mortality after PE was observed. During the early 10-year period following delivery, the risk for CVD, heart failure and stroke

are relatively high. The connotation between PE and early CVD progression is not totally understood³. The objective of this study is to evaluate the preeclampsia in daughters is associated with CVD in parents.

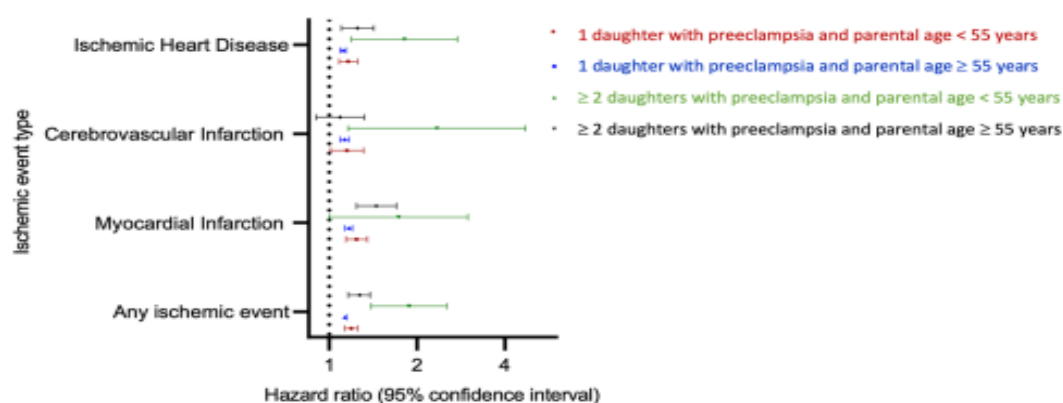
Method:

All women in Denmark ≥ 15 years of age with one or more pregnancy of >20 weeks' duration between 1978 and 2017 were identified and parents using the Danish Family Relations Database the parents were considered. Number of daughters with preeclampsia complicating one or more pregnancies was the exposure. A daughter was considered to have preeclampsia in a given pregnancy if she was registered in the National Patient Register with preeclampsia, eclampsia or haemolysis or elevated liver enzymes and low platelets (HELLP) syndrome. A parent was considered to have had CVD on the date of his/her first registration in the National Patient Register or Causes of Death Register with myocardial infarction, cerebrovascular infarction disorder.

Results:

A total of 1,299,310 persons who had one or more daughters with eligible pregnancies between 1978 and 2017 were considered. The majority of parents that is 56% had one daughter, 34% had two daughters, and only 10% had three or more daughters. Having one daughter with a history of preeclampsia was associated with a 19% increase in the rate of any parental CVD at <55 years of age, compared without preeclampsia. As shown in figure 2 Having two or more daughters with a history of preeclampsia was more strongly associated with parental CVD in this age group. During follow-up, 87,251 parents had one or more daughters with preeclampsia. Examination of gestational age at preeclampsia onset in daughters, the results suggested that preterm pre-eclampsia, particularly in multiple daughters, might be most strongly associated with CVD in parents.

Figure: 2 Hazard ratios for cardiovascular disease in parents by parental age, number of daughters with preeclampsia



Discussion:

Several studies have linked preeclampsia with increased risk of later CVD⁴, strength of association for mothers and fathers supports the hypothesis that preeclampsia is linked with CVD through common heritable factors. Stronger associations for mothers than for fathers was seen and strong familial aggregation of preeclampsia in the female line as decidedly smaller coupled with mothers' increased risk of CVD after their own preeclampsia.

Conclusion:

Cohorts having one or more daughters with a history of preeclampsia was associated with increases in the risk of CVD in parents and this study suggest that suggest that preeclampsia and CVD share common genetic mechanism

Cohorts having one or more daughters with a history of preeclampsia was associated with increases in the risk of CVD in parents and this study suggest that suggest that preeclampsia and CVD share common genetic mechanism

Reference:

1. Lihme F, Basit S, Sciera LK, Andersen AM, Bundgaard H, Wohlfahrt J, Boyd HA. Association between preeclampsia in daughters and risk of cardiovascular disease in parents. *European Journal of Epidemiology*. 2023 Mar 15:1-9.
2. Wojczakowski W, Kimber-Trojnar Ż, Dziwisz F, Słodzińska M, Słodziński H, Leszczyńska-Gorzelak B. Preeclampsia and cardiovascular risk for offspring. *Journal of Clinical Medicine*. 2021 Jul 16;10(14):3154.
3. Jääskeläinen T, Kivelä A, Renlund M, Heinonen S, Aittasalo M, Laivuori H, Sarkola T. Protocol: A randomized controlled trial to assess effectiveness of a 12-month lifestyle intervention to reduce cardiovascular disease risk in families ten years after pre-eclampsia (FINNCARE). *Preventive Medicine Reports*. 2022 Apr 1; 26:101731.
4. Diniz ALD, Paes MMBM, Diniz AD. Analyzing Preeclampsia as the tip of the Iceberg represented by women with LongTerm Cardiovascular Disease, atherosclerosis, and inflammation. *Curr Atheroscler Rep*. 2020;22(3):13

Dietary management of patients at high risk for cardiovascular disease

Introduction: Worldwide, prevalence of Cardiovascular risk factors such as hypertension, dyslipidaemia and diabetes are increasing¹ and it is a leading causes of death, accounts for one third of all mortality. In the past decade, CVD mortalities have increased globally by 12.5%². Unhealthy diet is the one of the Significant risk factor of CVD, so encouraging healthy diet adherence is important in decreasing CVD morbidity and mortality². Adults who follow to

guidelines for a healthy diet and physical activity have lower cardiovascular morbidity and mortality than those who do not follow³. Healthy dietary patterns like Mediterranean diet, have been associated with lower concentrations of some inflammatory biomarkers and a reduced risk of CVD⁴. Persons irrespective of risk status can gain health benefits from healthy eating behaviours and appropriate physical activity³. The aim of this study is to assess the dietary actions taken by subjects presenting with at least one of the main cardiovascular risk factors

Method: A Cross-sectional, multicentre observational study was conducted in 78 centres from 16 ESC countries. Participants aged 18-79 years, devoid of CVD but treated with antihypertensive and/or lipid lowering and/or antidiabetic therapy were interviewed >6 months and <2 years after medication initiation. Information regarding dietary management was collected by questionnaire. Descriptive statistics were used to evaluate the prevalence rates of dietary actions taken by the participants.

Results: A total of 2759 participant's and overall participation rate is 70.2%, 1589 women. Nearly ≥60 years of patients 1415 aged, 43.5% with obesity, 71.1% on antihypertensive, 29.2% on lipid-lowering and 31.5% on antidiabetic treatment. After dietary action taken, among participants with obesity, 71.8% described reducing fat and 69.6% reducing sugar intake. 62.0% reported consuming fewer calories, and 48.7% reported reducing excessive alcohol intake 47.7% reported having received dietary advice to lose weight.

Among participants on antihypertensive drug therapy, 53.9% of the participants reported being on a special diet recommended by a doctor, and 71.4% reported having reduced their salt intake. 76.0% reported having increased fruit and vegetable intake, 70.4% reported having reduced their fat intake, 60.6% reported having changed the type of fat intake, 60.1% reported consuming more fish, and 44.0% reported consuming oilier fish. Patients with diabetes, overall 57.2% of participants reported being on a special diet prescribed by a health professional, 80.8% reported having reduced sugar intake, 77.6% reported increased fruit & vegetable intake; 76.5% reported having reduced fat, and 51.3% reported having reduced excessive alcohol intake.

Discussion: Participants with obesity reported having reduced their caloric intake through reduction of fat or sugar intake, same values are reported in a previous study. Salt reduction

has been shown to decrease blood pressure levels and measures for salt reduction are beneficial and cost-effective for cardiovascular disease

Table: 1 Dietary management

Table 4. Dietary management and actions taken during the last three years by patients using lipid-lowering drugs at interview, EUROASPIRE V.

	Special diet *		Less fat ‡		Changing type of fat intake ‡		More F&V ‡	
	N	% and 95% CI	N	% and 95% CI	N	% and 95% CI	N	% and 95% CI
All	922	56.0 (52.7 - 59.2)	929	70.4 (67.3 - 73.3)	907	60.6 (57.4 - 63.8)	932	76.0 (73.1 - 78.7)
Centre								
Bosnia & Herzegovina	65	84.6 (73.5 - 92.4)	61	88.5 (77.8 - 95.3)	58	66.7 (52.5 - 78.9)	62	85.5 (74.2 - 93.1)
Bulgaria	36	72.2 (54.8 - 85.8)	39	53.8 (37.2 - 69.9)	38	38.5 (23.4 - 55.4)	39	66.7 (49.8 - 80.9)
Croatia	84	72.6 (61.8 - 81.8)	84	71.4 (60.5 - 80.8)	76	63.1 (51.9 - 73.4)	82	81.7 (71.6 - 89.4)
Czech Republic	33	33.3 (18.0 - 51.8)	33	57.6 (39.2 - 74.5)	33	51.5 (33.5 - 69.2)	33	69.7 (51.3 - 84.4)
Egypt	31	90.3 (74.2 - 98.0)	31	87.1 (70.2 - 96.4)	31	67.7 (48.6 - 83.3)	31	54.8 (36.0 - 72.7)
Greece	91	85.7 (76.8 - 92.2)	95	81.1 (71.7 - 88.4)	95	70.8 (60.7 - 79.7)	96	84.4 (75.5 - 91.0)
Kazakhstan	13	76.9 (46.2 - 95.0)	13	76.9 (46.2 - 95.0)	13	69.2 (38.6 - 90.9)	13	76.9 (46.2 - 95.0)
Kyrgyzstan	6	33.3 (4.3 - 77.7)	6	66.7 (22.3 - 95.7)	6	66.7 (22.3 - 95.7)	6	83.3 (35.9 - 99.6)
Lithuania	60	45.0 (32.1 - 58.4)	62	80.6 (68.6 - 89.6)	60	78.3 (65.8 - 87.9)	63	85.7 (74.6 - 93.3)
Poland	76	39.5 (28.4 - 51.4)	77	58.4 (46.6 - 69.6)	77	53.9 (42.1 - 65.5)	76	65.8 (54.0 - 76.3)
Portugal	95	51.6 (41.1 - 62.0)	95	73.7 (63.6 - 82.2)	94	61.5 (51.0 - 71.2)	96	85.4 (76.7 - 91.8)
Romania	101	74.3 (64.6 - 82.4)	102	81.4 (72.4 - 88.4)	100	69.0 (59.0 - 77.9)	101	88.1 (80.2 - 93.7)
Russian Federation	31	67.7 (48.6 - 83.3)	31	80.6 (62.5 - 92.5)	31	74.2 (55.4 - 88.1)	31	74.2 (55.4 - 88.1)
Sweden	28	7.1 (0.9 - 23.5)	28	32.1 (15.9 - 52.4)	28	39.3 (21.5 - 59.4)	28	42.9 (24.5 - 62.8)
Ukraine	77	33.8 (23.4 - 45.4)	77	62.3 (50.6 - 73.1)	73	56.6 (44.7 - 67.9)	80	71.3 (60.0 - 80.8)
United Kingdom	95	15.8 (9.1 - 24.7)	95	54.7 (44.2 - 65.0)	94	42.6 (32.4 - 53.2)	95	62.1 (51.6 - 71.9)

Conclusion: Study concludes that less than 6 out of 10 participants at high cardiovascular risk report being on a specific diet and dietary management of cardiovascular risk factors is unevenly implemented in different ESC countries.

Reference:

- Marques-Vidal P, Jankowski P, Reiner Ž, De Bacquer D, Kotseva K, Ferrari R, Alonso A, Bax J, Blomström-Lundqvist C, Gielen S, Lancellotti P. Dietary management of patients at high risk for cardiovascular disease; EUROASPIRE V. Clinical Nutrition ESPEN. 2023 Mar 15.
- Chareonrungrueangchai K, Wongkawinwoot K, Anothaisintawee T, Reutrakul S. Dietary factors and risks of cardiovascular diseases: an umbrella review. Nutrients. 2020 Apr 15;12(4):1088.
- Krist AH, Davidson KW, Mangione CM, Barry MJ, Cabana M, Caughey AB, Donahue K, Doubeni CA, Epling JW, Kubik M, Landefeld S. Behavioral counseling interventions to promote a healthy diet and physical activity for cardiovascular disease prevention in adults with cardiovascular risk factors: US Preventive Services Task Force recommendation statement. Jama. 2020 Nov 24;324(20):2069-75.
- Li J, Lee DH, Hu J, Tabung FK, Li Y, Bhupathiraju SN, Rimm EB, Rexrode KM, Manson JE, Willett WC, Giovannucci EL, Hu FB. Dietary Inflammatory Potential and Risk of Cardiovascular Disease Among Men and Women in the U.S. J Am Coll Cardiol. 2020 Nov 10;76(19):2181-2193.
- Kotseva K, De Bacquer D, De Backer G, Ryden L, Jennings C, Gyberg V, et al. Lifestyle and risk factor management in people at high risk of cardiovascular disease. A report from the European Society of Cardiology European Action on Secondary and Primary Prevention by Intervention to Reduce Events (EUROASPIRE) IV cross-sectional survey in 14 European regions. Eur J Prev Cardiol. 2016;23:2007-18
- Yin X, Rodgers A, Perkovic A, Huang L, Li KC, Yu J, et al. Effects of salt substitutes on clinical outcomes: a systematic review and meta-analysis. Heart. 2022; 108:1608-15

Study concludes that less than 6 out of 10 participants at high cardiovascular risk report being on a specific diet and dietary management of cardiovascular risk factors is unevenly implemented in different ESC countries.

A Case of Takotsubo Cardiomyopathy in a Patient with Known Coronary Artery Disease

Introduction:

Takotsubo cardiomyopathy (TCM) is an infrequent clinical disorder which is characterized by systolic dysfunction, primarily affecting the left ventricle¹. Prevalence is 1.0-2.5%, with most cases to occur in post-menopausal women and several conditions have been linked to TC, like over-stimulation of the sympathetic system, microvascular and myocardial tissue metabolism abnormality, and coronary artery vasospasm². Initially, emotional stress was considered as essential for TTS and thus TTS was also named as stress-induced cardiomyopathy as emotional stress was documented in only 20-39% and physical stress in 35-55% of cases. Excitingly, not only negative emotional stress but also positive emotional stress could be a trigger of TTS, which is termed as happy heart syndrome³. The aim of this study is to present a case of a 65-year-old female who presented with acute chest pain, shortness of breath and psychosocial stressor.

Case Report

A 65-year-old female with a known history of coronary artery disease (CAD), heart failure with preserved ejection fraction, chronic obstructive pulmonary disease, hypertension, tobacco dependence, and prior polysubstance use disorder, presented for acute onset chest pain and shortness of breath.

Patient was compliant with dual antiplatelet therapy (DAPT) following percutaneous coronary intervention (PCI) to the left anterior descending (LAD) artery just two months prior to the presentation. She is a known smoker of tobacco for past 15 years. Due to a destructive family altercation, she reported a reflective increase in anxiety level.

On examination shows that blood pressure was 191/126 mmHg, heart rate was 87 beats per minute (bpm), oxygen saturation of 98% on room air, and temperature of 97.7 °F. Her cardiac and respiratory examinations were normal. Notably, her respiratory viral panel was positive for COVID-19 infection. Laboratory testing shows an elevated zero-hour high sensitivity troponin of 63 ng/L with continued rise to 152 ng/L in one hour, and N-terminal brain natriuretic peptide of 5,676 pg/ml. Chest radiography revealed engorgement of the central pulmonary vasculature and mild bilateral prominence of the pulmonary interstitium.

A diagnosis of TCM was initially considered, but given her known CAD, COVID-19 infection, and positive troponin trend, a NSTEMI was deemed more likely. She resumed on her DAPT

and started on a heparin infusion. She was consequently scheduled for an urgent left heart catheterization (LHC), which revealed patency of previous drug-eluting stent to the LAD and no change in her known coronary artery disease from two months' prior as shown in fig 2. Her overall clinical picture was deemed more consistent with TCM, and anticoagulation therapy was subsequently discontinued. Following supportive care, she was discharged in a stable condition and had complete resolution of her apical dyskinesia at four weeks follow up.

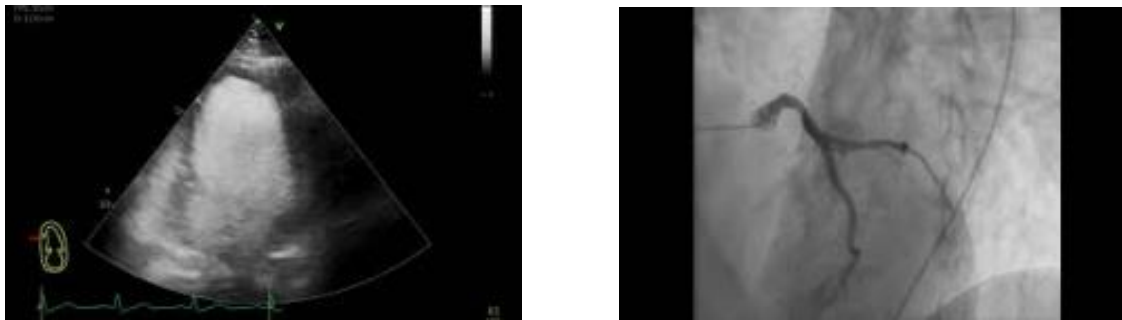


Figure 2 Left heart catheterization & Transthoracic echocardiogram

Discussion:

TCM is most recognized among post-menopausal women over 50 years of age, following an emotional or physical stressor as similar results were noted in study conducted by

Conclusion: Case study shows that, physicians should have a high clinical suspicion for TCM in the appropriate setting when presented with a postmenopausal female and recent psychosocial stressors. Further research is needed to elucidate the etiology, reason for variance in the clinical presentations, and pathophysiology of Takotsubo cardiomyopathy.

Reference:

1. Ghobrial M, Karan A, Omar M, Velarde G. The Stressed Heart: A Case Report of Takotsubo Cardiomyopathy in a Patient With Known Coronary Artery Disease. *Cureus*. 2023 Mar 17;15(3).
2. Amin HZ, Amin LZ, Pradipta A. Takotsubo cardiomyopathy: a brief review. *Journal of medicine and life*. 2020 Jan;13(1):3.
3. Okura H. Update of takotsubo syndrome in the era of COVID-19. *Journal of cardiology*. 2021 Apr 1;77(4):361-9.
4. Khalid N, Ahmad SA, Shlofmitz E, Chhabra L: Pathophysiology of Takotsubo syndrome. StatPearls Publishing, Treasure Island, FL; 2021

Case study shows that physicians should have a high clinical suspicion for TCM in the appropriate setting when presented with a postmenopausal female and recent psychosocial stressors.



This scientific input is prepared from the Department of Medical Services, an initiative of M/s Micro Labs Limited under the aegis of Micro Knowledge Academy. The information contained herein is for education purpose only. The content is developed by compiling information from various authentic and published literatures. Although great care has been taken to assure the accuracy of the publication, M/s Micro Labs Limited shall not be responsible or in any way liable for any inaccuracy, errors, or omissions resulting from negligence or otherwise howsoever or any consequences arising there from. In spite of best efforts, the information in this publication may become outdated over time. M/s Micro Labs Limited shall not be responsible in any manner whatsoever, for any action taken, opinions expressed, advice rendered or accepted, any direct, incidental, special or consequential loss and damage caused on the basis of any material or information presented in this publication / update.