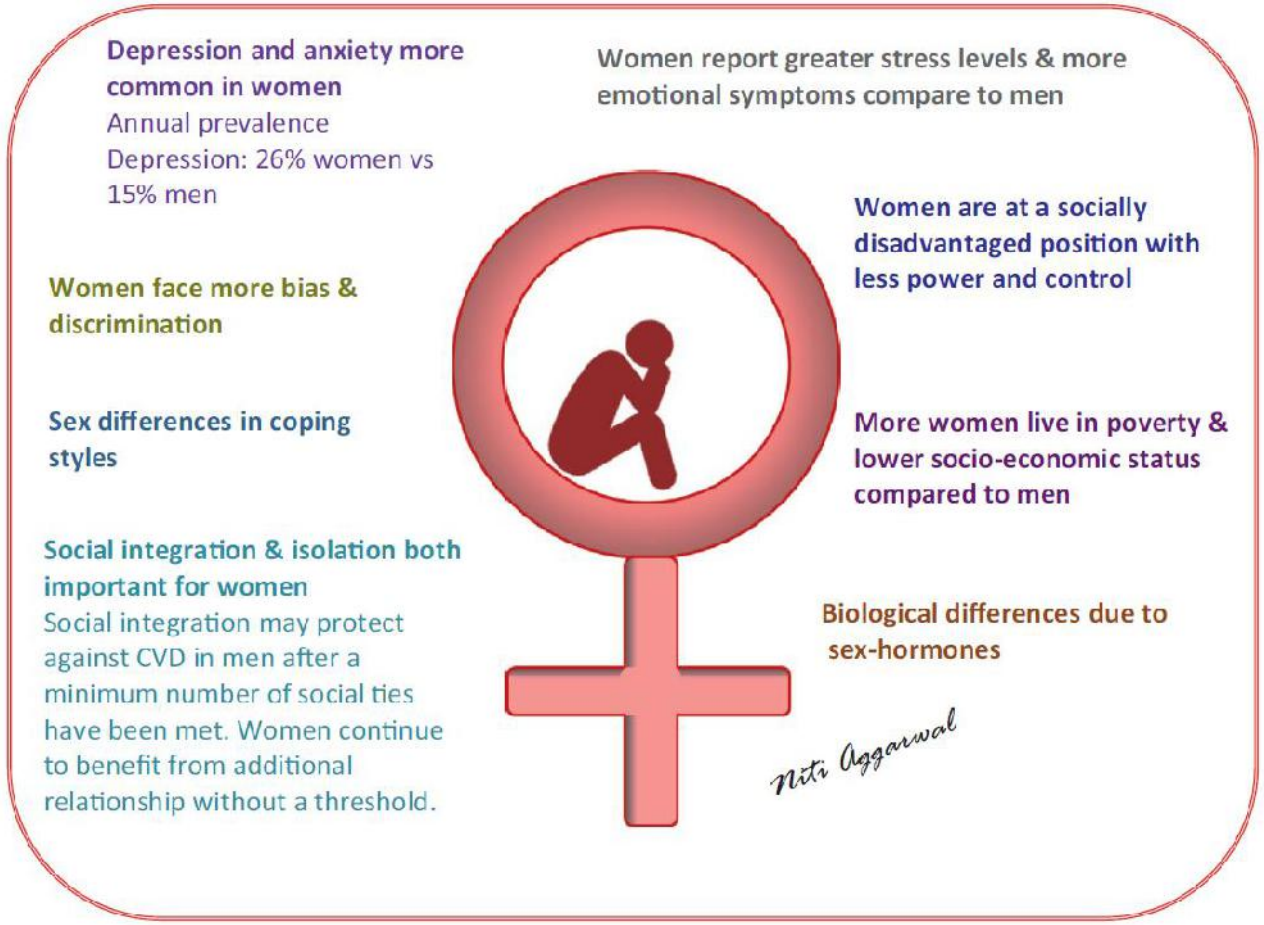
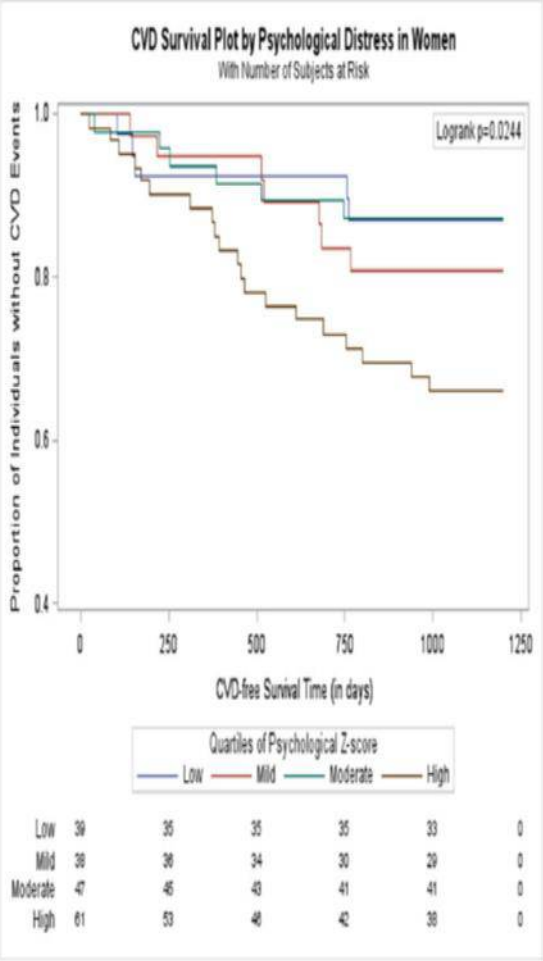
9. Consideration of Psychological Health is Advisable in the Evaluation of Women with or at risk for Cardiovascular Disease





After diagnosis of CAD psychological distress associated higher risk of events in women compared to men

Greater vulnerability to psychological stress

Psychosocial stress increases risk of CVD generally

Current system ill-equipt to provide integrated comprehensive care to women and men with heart disease

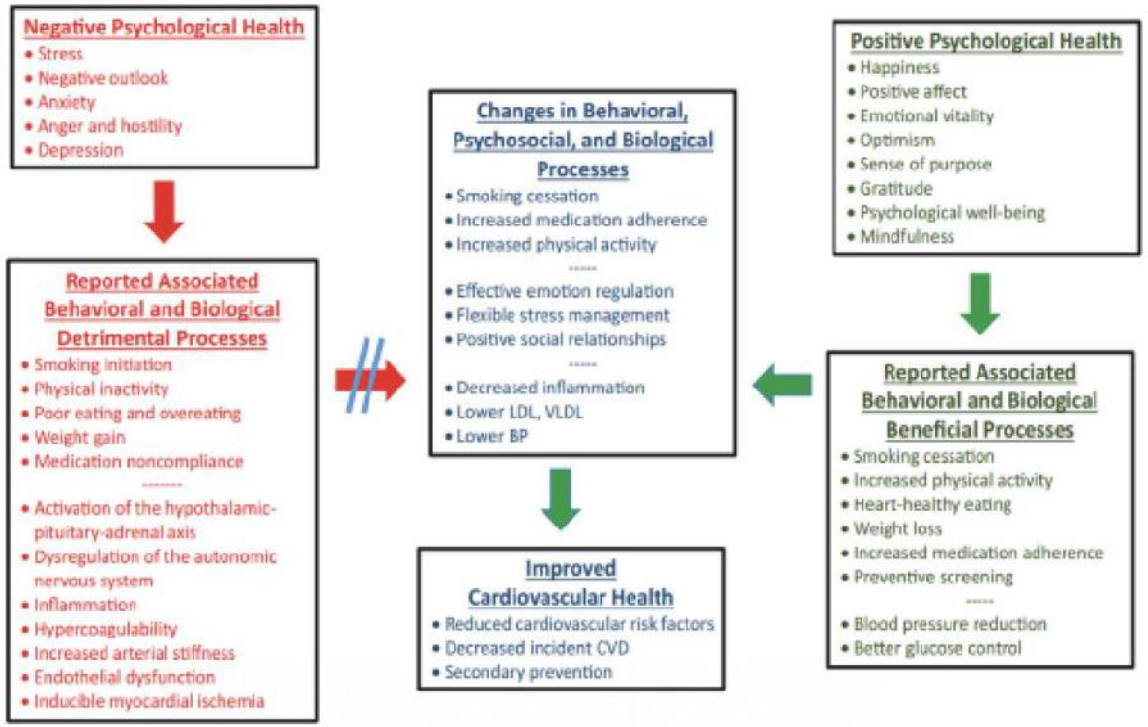
(Pimple JAHA 2019, Rosengren and Manheim, 2015)

Circulation

AHA SCIENTIFIC STATEMENT

Psychological Health, Well-Being, and the Mind-Heart-Body Connection

A Scientific Statement From the American Heart Association



Levine G, Circulation 2021

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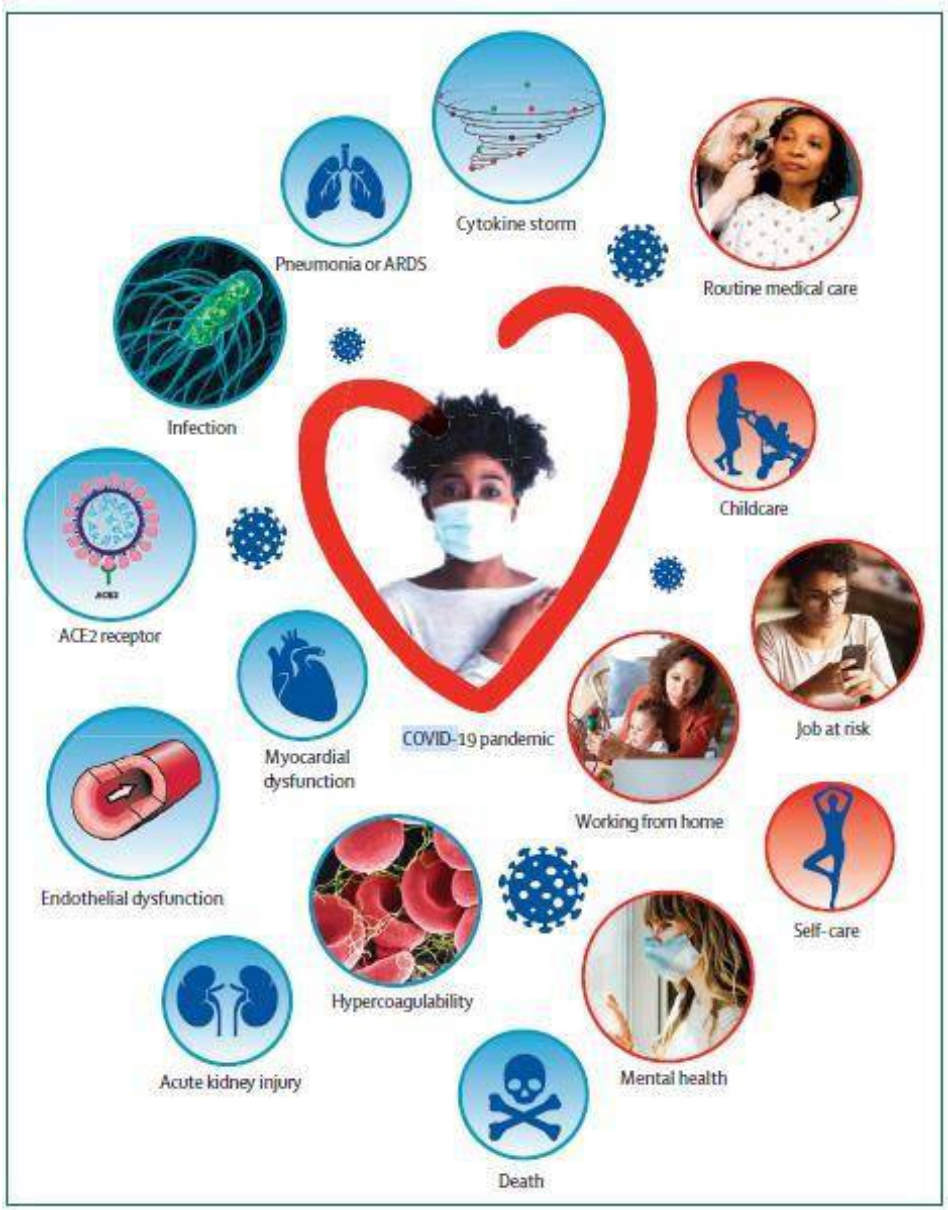
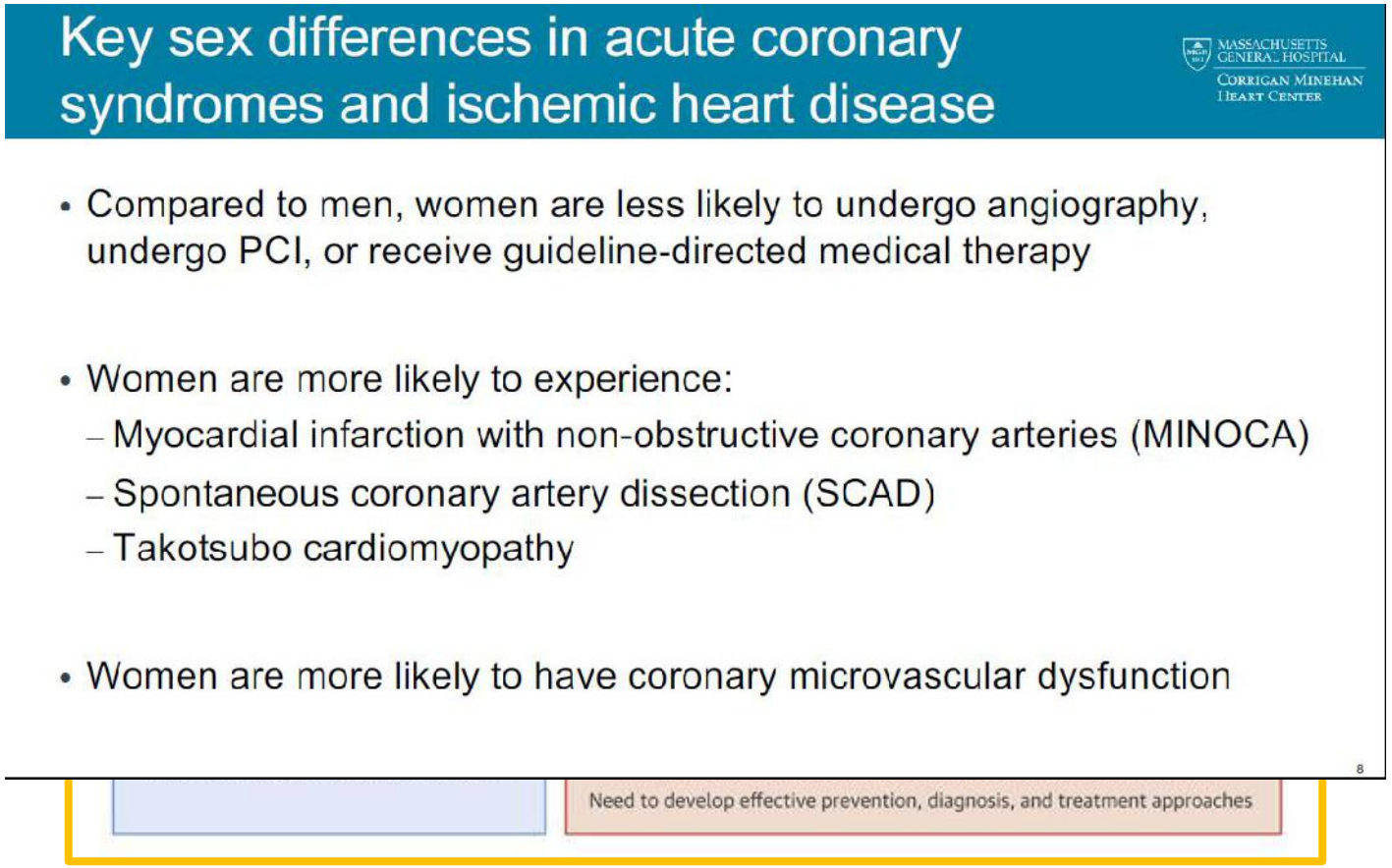
10. The COVID-19 pandemic is a strong reminder

…on how sex- and gender-related factors can interact to negatively affect women's cardiovascular health.

The COVID-19 pandemic has shown inexorably on how the socioeconomic status and the cultural role of the woman in society affect the physical and mental health and wellbeing of women globally.



Spectrum of IHD



Pepine JACC 2015; 66(17): 1918-33

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ISCHEMIC HEART DISEASE

INOCA

- Research the
  underlying m
  evaluation a

MINOCA

- Understand th
  provide therap
- Investigate tre
  prevention stra
- Endorse MIN
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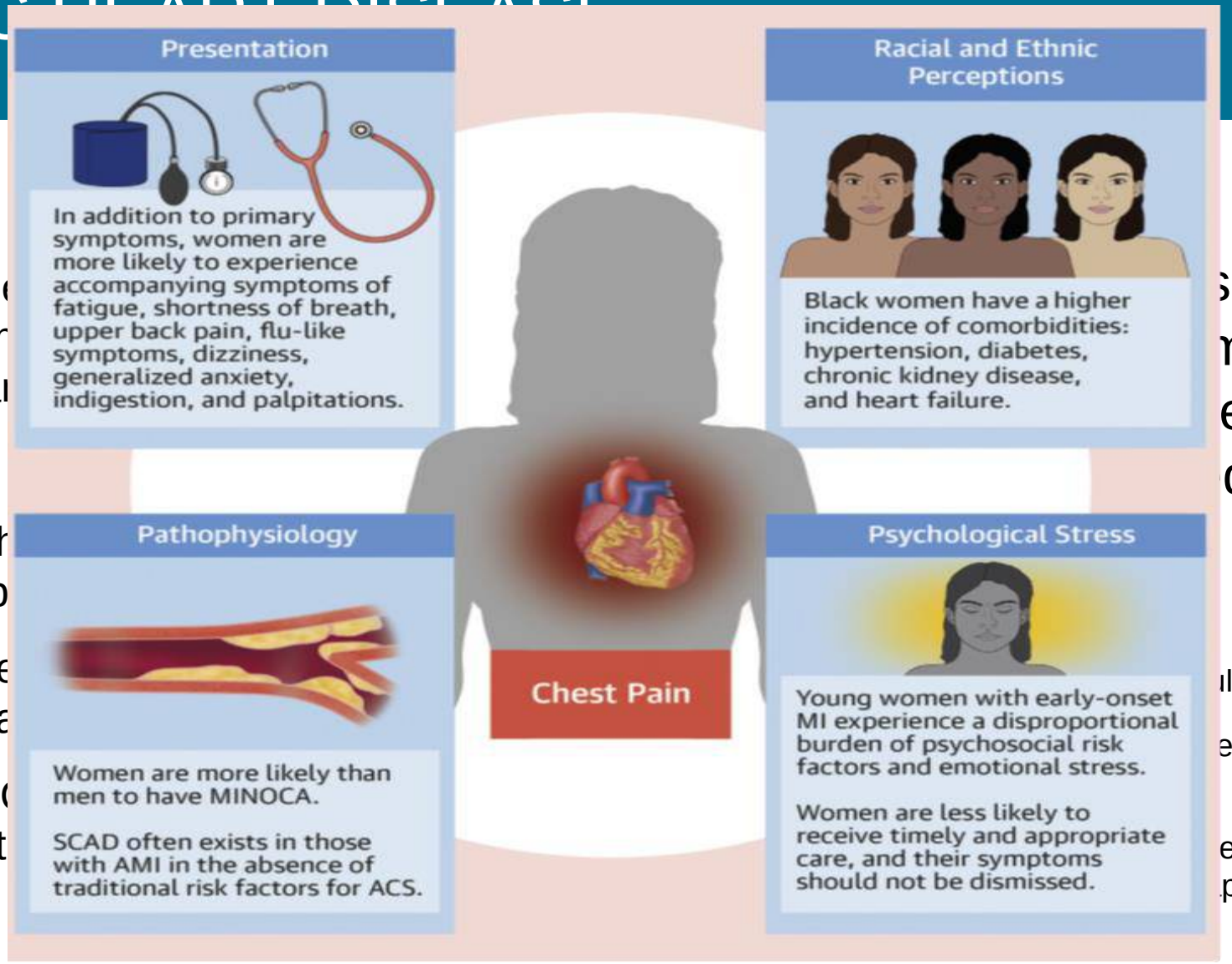
  Association)



s in
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erences as underlying
p in STEMI

HEART FAILURE

- The overwhelming increase in the incidence of HFpEF in women with limited therapeutic options underlines the importance of further research in this area
- Prospective, sex-specific dose-finding studies for heart failure therapies are warranted
- Women are more susceptible than men to cardiogenic shock after MI and further research is urgently needed to investigate the underlying mechanisms
- Women w VADs higher waitlist mortality and less likely to receive transplant

Takotsubo syndrome

- Establish international research collaborations with access to large registries to improve diagnosis and treatment
- Train clinicians to recognize, identify and treat serious complications and outcomes

Peripartum Cardiomyopathy

- Initiate large-scale multicenter prospective registries and RCTs to examine the benefit of standard heart failure treatments as well as emerging therapies
- Establish a global collaboration between specialised centres to investigate pathophysiology, prognosis, diagnosis and treatment

HEART FAILURE

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ARRHYTHMIA

Ventricular Tachyarrhythmia and Sudden Cardiac Death

- Inappropriate shocks and ICD complications more common in women
- Improve global data collection to identify accurate sudden cardiac death rates in women
- Train the community to recognize and respond to sudden cardiac death to tackle the lower likelihood of bystander resuscitation in women than men
- Investigate the true benefit of implantable cardioverter-defibrillator therapy in women

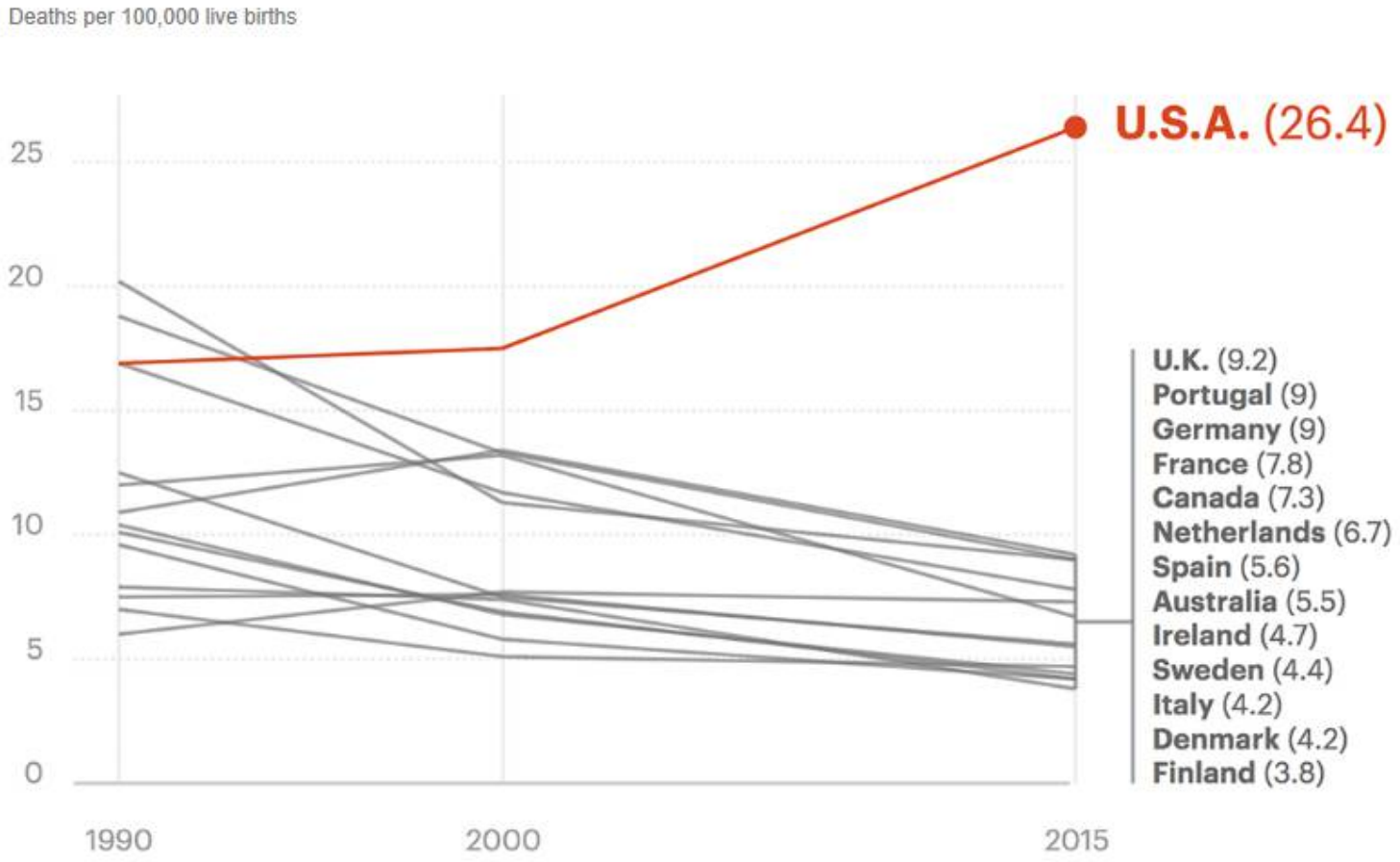
Atrial fibrillation

- Improve diagnosis and treatment to reduce the risk of stroke in women
- Initiate dedicated studies in women to develop treatment strategies that take women's older age and higher prevalence of comorbidities at time of presentation into account
- Address the underrepresentation of women in clinical trials for rhythm and rate control as well as left atrial appendage occlusion device therapies

CARDIOVASCULAR DISEASE AND PREGNANCY

- Cardiovascular disease is a major contributor to (late) maternal death worldwide.
- Late maternal death is not well documented and therefore, a neglected issue.
- Global estimates of access to surgery and treatment of congenital heart disease in women are missing. Data on pregnancy outcomes in women with uncorrected congenital heart disease are very limited. Studies and registries addressing these knowledge gaps are urgently needed.
- Cardio-Obstetrics is an emerging multidisciplinary team approach and crucial for optimal care for women with cardiovascular disease during pregnancy.
- Prevalence of rheumatic heart disease remains high in certain regions of the world, and young women of childbearing age are disproportionately affected.
- Multidisciplinary cooperation combined with appropriate pre-conception counselling and antenatal care is crucial to reduce complications from rheumatic heart disease in pregnancy.

Maternal Mortality is Rising in the US as it Declines Elsewhere.



Notes

"Global, regional, and national levels of maternal mortality, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015," *The Lancet*.
Only data for 1990, 2000 and 2015 was made available in the journal.

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Racial/ethnic Disparities in Pregnancy-Related Mortality

The New York Times

For Serena Williams, Childbirth Was a Harrowing Ordeal. She's Not Alone.

After giving birth in September, Serena Williams was bedridden for six weeks from a string of medical complications. Martin Dokoupil/European Pressphoto Agency

Deaths per 100,000 live births

42.8 black non Hispanic

32.5 American Indian/Alaskan native

13.0 white non Hispanic

14.2 Asian/Pacific islander non Hispanic

11.4 for Hispanic women

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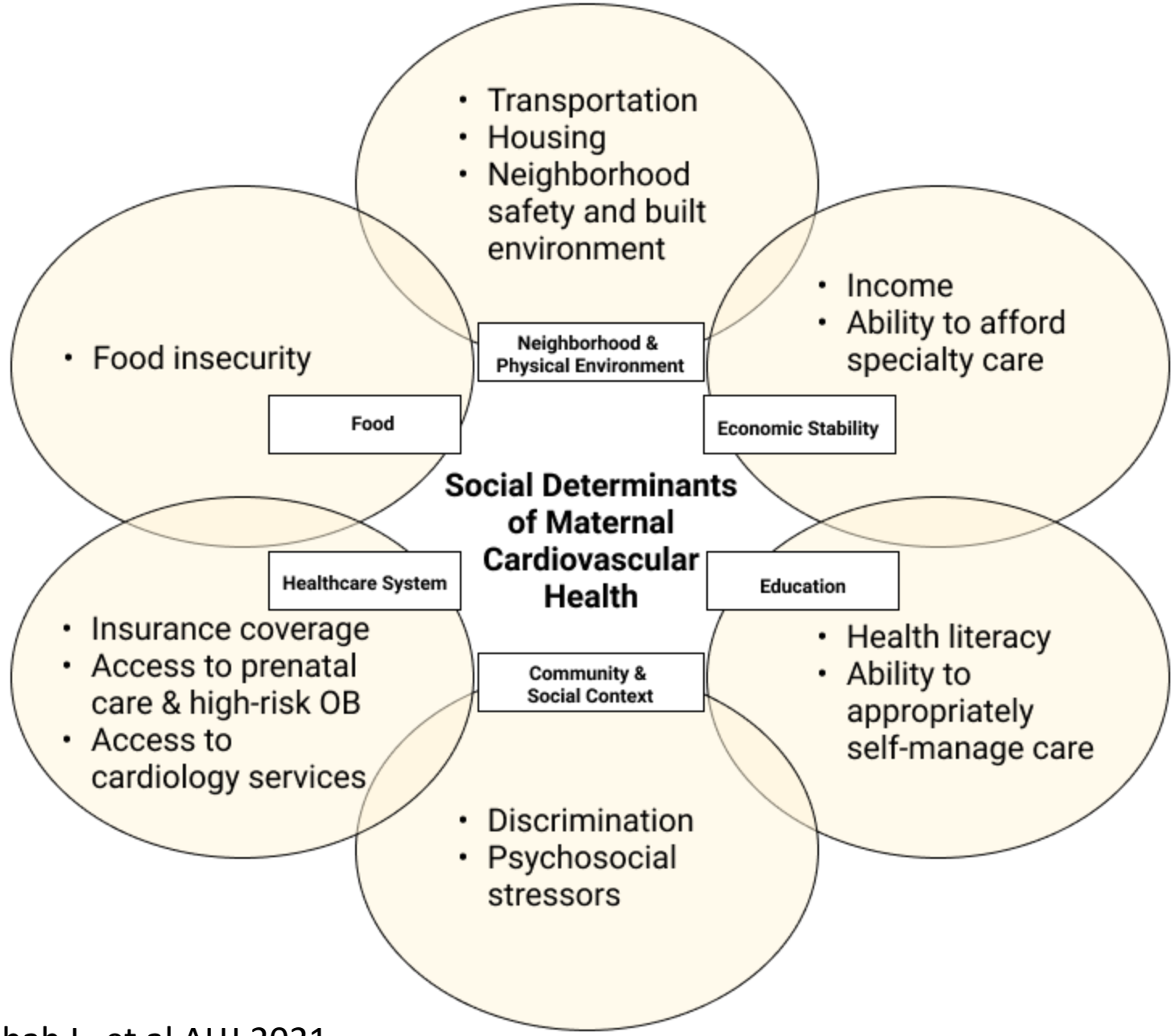
Why is Maternal Mortality Increasing?

- Women are older, more chronic conditions
- Fertility Therapies → greater incidence of multiple gestation pregnancies
- Lack of access to primary care
- Variability in quality of care
- Lack of national protocols and thus standardized care
- Lack of systemic review of cases
- Rising rate of Caesarian section
- Variable access to birth control – which allow a pregnancy to be planned and preexisting medication conditions are optimally managed



Shah L, et al AHJ 2021

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4 Key Factors Related to Maternal Cardiovascular Mortality

ACOG PRACTICE BULLETIN
Clinical Management Guidelines for Obstetrician–Gynecologists
Number 212

- Race/Ethnicity
  - Black women have 3.4 times risk of dying than whites
- Age
  - Age >40 increases risk to 30 TIMES the risk of women <20 years old
- Hypertension – chronic or hypertensive disorder of pregnancy
  - Risk of MI is 13 fold
  - Risk of heart failure is 8 fold
- Obesity
  - 60% of maternal deaths occur in overweight or obese women

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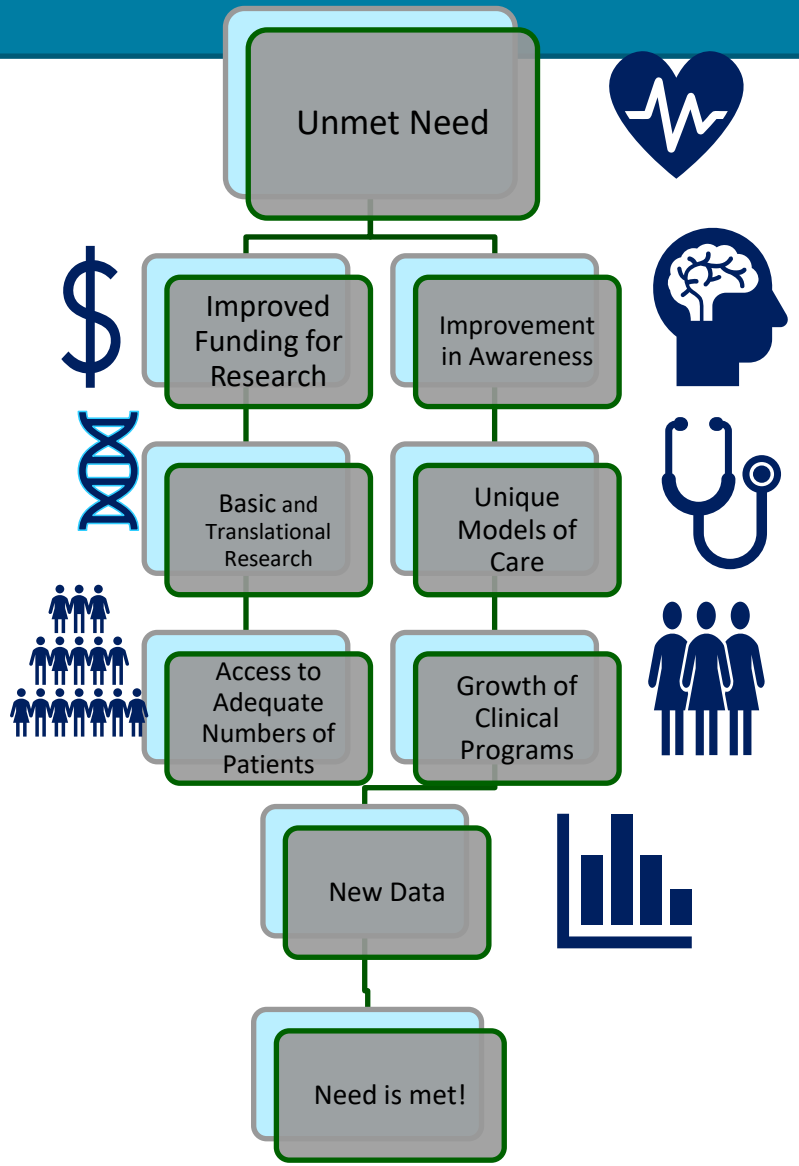
Why Do We Need Dedicated Women's Heart Programs?



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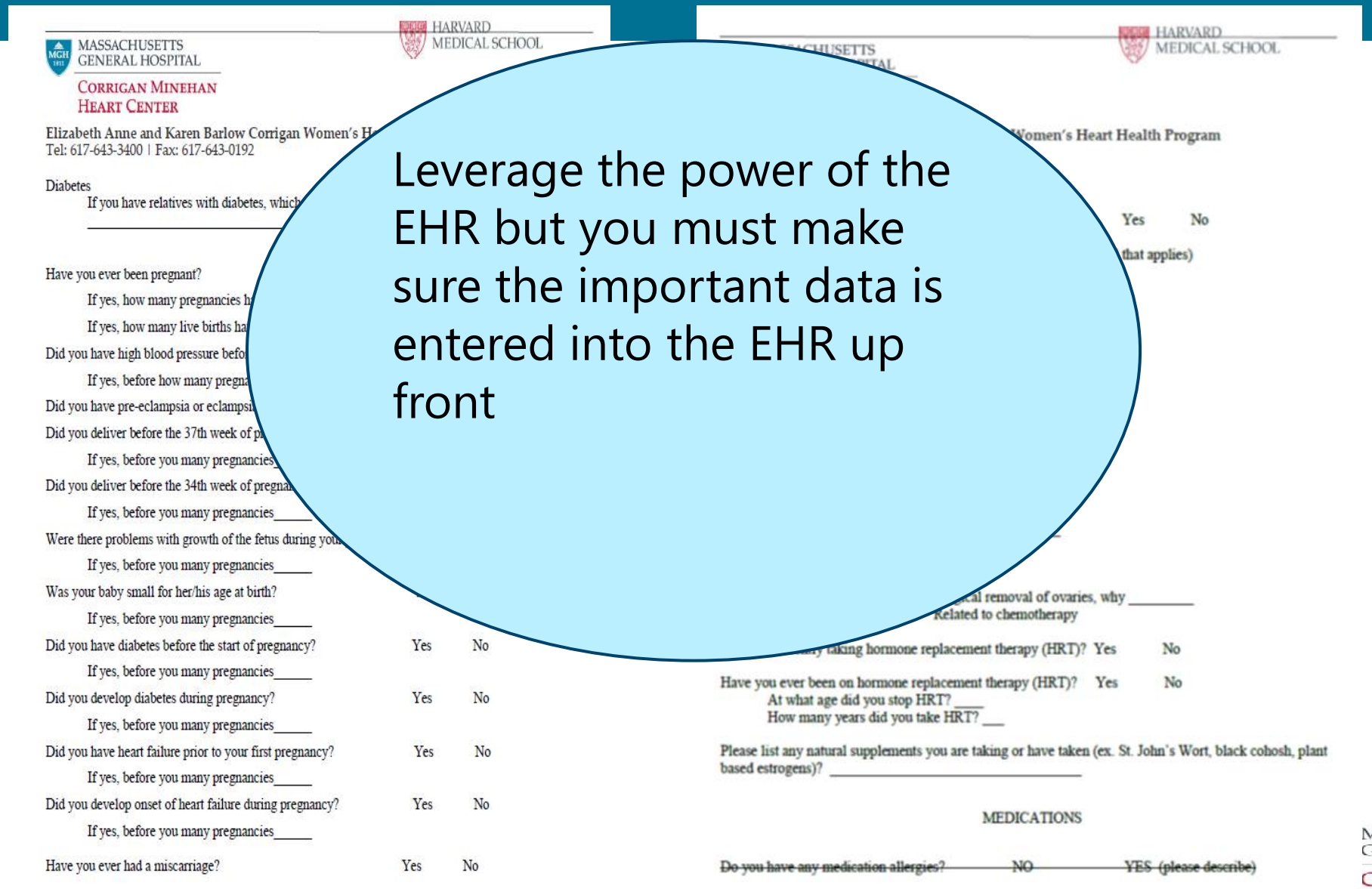
Sex-specific Questionnaires – You gotta ask!



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HARVARD MEDICAL SCHOOL

Elizabeth Anne and Karen Barlow Corrigan Women's H
Tel: 617-643-3400 | Fax: 617-643-0192

Diabetes
If you have relatives with diabetes, which

Have you ever been pregnant?
If yes, how many pregnancies h
If yes, how many live births ha
Did you have high blood pressure befo
If yes, before how many pregna
Did you have pre-eclampsia or eclampsi
Did you deliver before the 37th week of p
If yes, before you many pregnancies
Did you deliver before the 34th week of pregna
If yes, before you many pregnancies
Were there problems with growth of the fetus during you
If yes, before you many pregnancies
Was your baby small for her/his age at birth?
If yes, before you many pregnancies
Did you have diabetes before the start of pregnancy? Yes No
If yes, before you many pregnancies
Did you develop diabetes during pregnancy? Yes No
If yes, before you many pregnancies
Did you have heart failure prior to your first pregnancy? Yes No
If yes, before you many pregnancies
Did you develop onset of heart failure during pregnancy? Yes No
If yes, before you many pregnancies

Have you ever had a miscarriage? Yes No

HARVARD MEDICAL SCHOOL

Women's Heart Health Program

Yes No

that applies)

cal removal of ovaries, why
Related to chemotherapy

taking hormone replacement therapy (HRT)? Yes No

Have you ever been on hormone replacement therapy (HRT)? Yes No
At what age did you stop HRT?
How many years did you take HRT?

Please list any natural supplements you are taking or have taken (ex. St. John's Wort, black cohosh, plant based estrogens)?

MEDICATIONS

~~Do you have any medication allergies? NO YES (please describe)~~

Leverage the power of the EHR but you must make sure the important data is entered into the EHR up front

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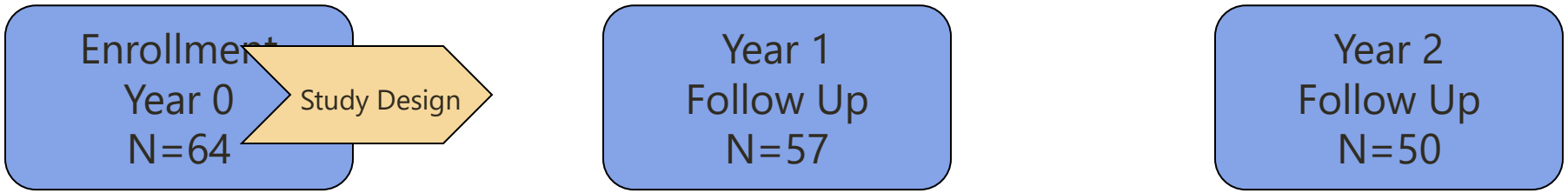
Heart Awareness and Primary Prevention in Your Neighborhood

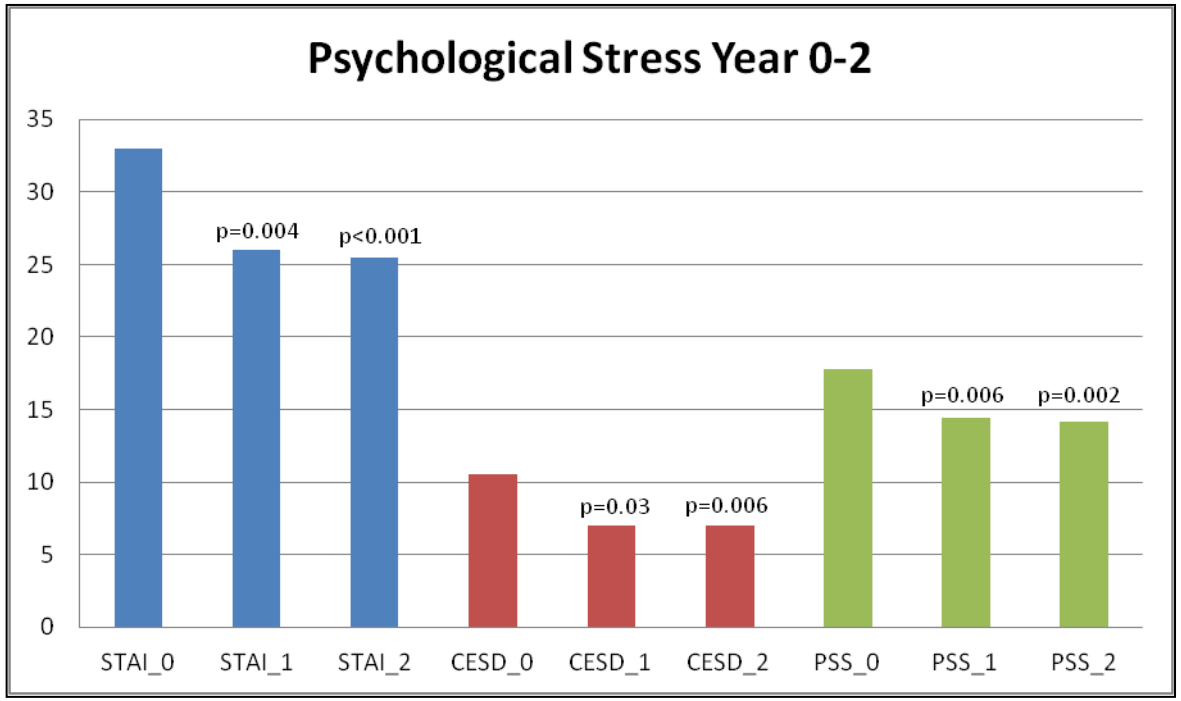
- Unique heart disease prevention model
- Low income women, 40-60 years of age
- Integration of individual and group health education/coaching, exercise, nutrition and stress management in a community health center

Methods: Study Design

Exercise	Nutrition	Psychological	Smoking
PT Consult ↓ Individualized exercise plan ↓ Regular check in w/ Health Coach *HAPPY Heart Exercise Classes	Nutrition Consult ↓ Individual diet - Cost/Family ↓ Regular check in w/ Health Coach *HAPPY Heart Cooking Classes	CESD-10 STAI PSS ↓ HAPPY Heart Relaxation & Medication Classes ↓ Regular check in w/ Health Coach	Offered cessation program Officered free pharmacologic options



Happy Heart Approach



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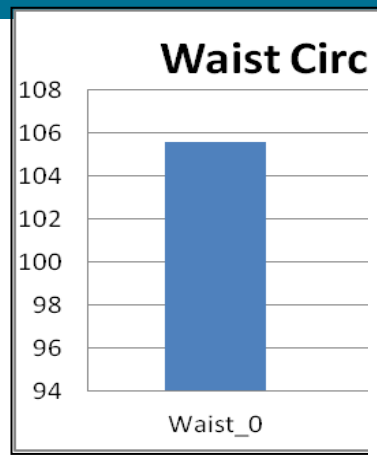

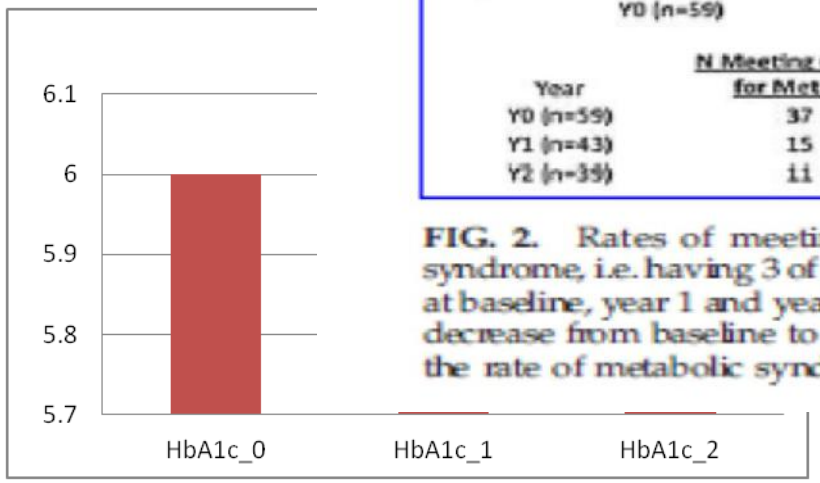

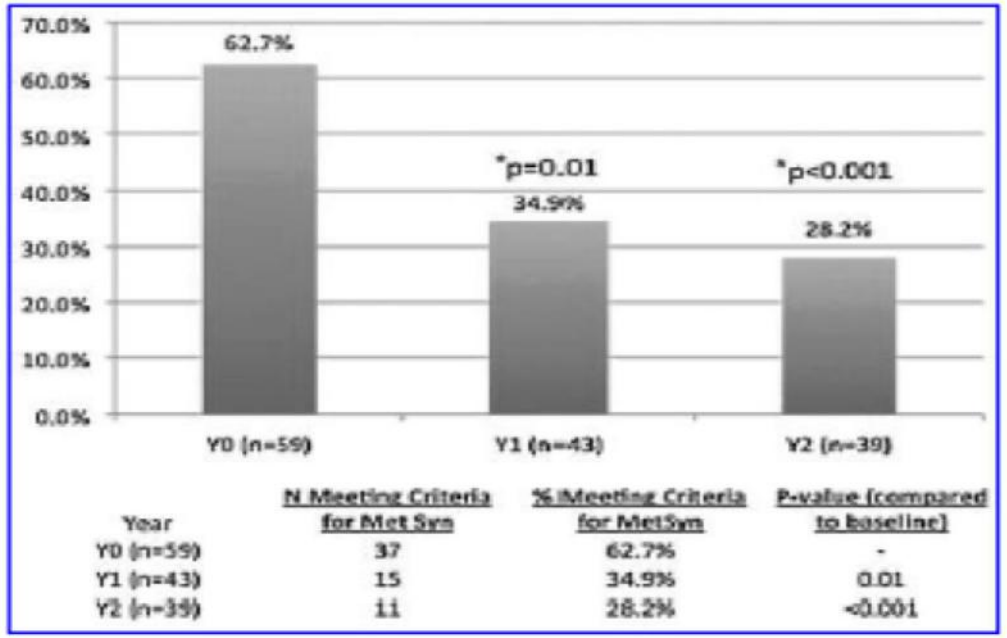

Year	N Meeting Criteria for Met Syn	% Meeting Criteria for MetSyn	P-value (compared to baseline)
Y0 (n=59)	37	62.7%	-
Y1 (n=43)	15	34.9%	0.01
Y2 (n=39)	11	28.2%	<0.001

FIG. 2. Rates of meeting diagnostic criteria for metabolic syndrome, i.e. having 3 of 5 components of metabolic syndrome, at baseline, year 1 and year 2. This figure displays the significant decrease from baseline to year 1 and from baseline to year 2 in the rate of metabolic syndrome. *Denotes significant value.

Gilstrap L, J Women's Health 20132

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Comprehensive CVD Prevention and Care

FIGURE 3 Nonpharmacologic and Pharmacologic Approaches to Addressing CVD in Men and Women. ASCVD, atherosclerotic cardiovascular disease.

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Women's Heart Care- It takes a village!

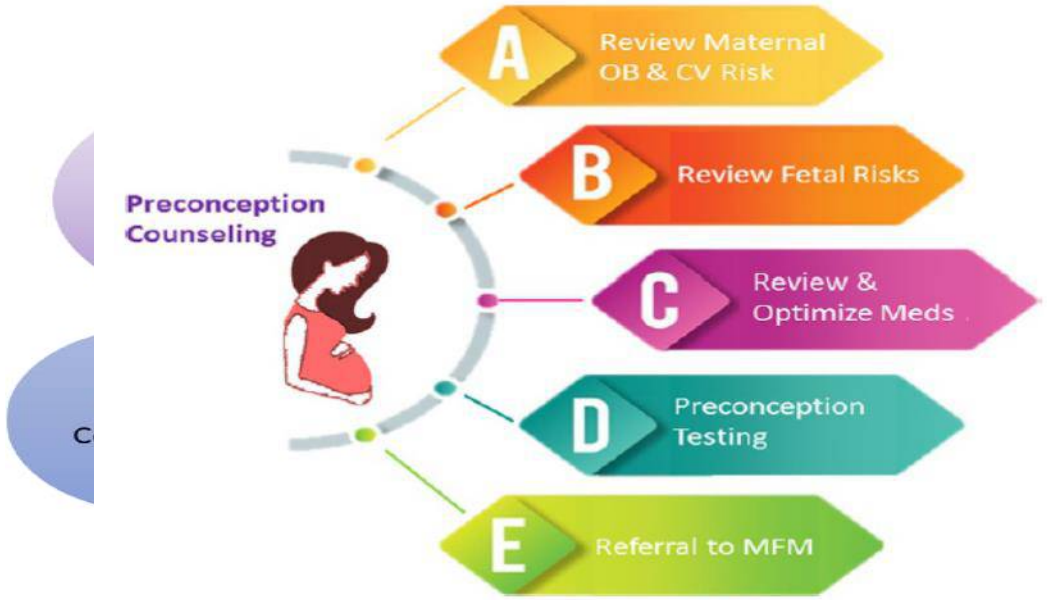

FIGURE 4 Overview of Preconception Counseling Considerations. CV, cardiovascular; MFM, maternal-fetal medicine; OB, obstetric. *Image courtesy of Niti R. Aggarwal.*

We Must Create a More Diverse Workforce!

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CARDIOVASCULAR MEDICINE AND SOCIETY

Does Patient-Physician Gender Concordance Influence Patient Perceptions or Outcomes?

Emily S. Lau, MD,[a] Sharonne N. Hayes, MD,[b] Annabelle Santos Volgman, MD,[c] Kathryn Lindley, MD,[d] Carl J. Pepine, MD,[e] Malissa J. Wood, MD,[a] and the American College of Cardiology Cardiovascular Disease in Women Section

Over the past several decades, there has been considerable progress in women's health, but changes in the gender composition of our physician workforce have been slow to adapt to the current landscape. Since 2019, women now comprise the majority of medical students enrolled in U.S. medical schools. This follows a trend of steady increases in the number of female medical students, from 46.9% in 2015 to 50.5% in 2019 among all medical school students. Despite this trend, the number of women physicians in some subspecialties, such as cardiology, cardiothoracic surgery, vascular surgery, and so on, remain staggeringly low. Only about 1 in 5 adult cardiology Fellows of the American College of Cardiology are women, and the percentage of women in cardiology is only 12.6%, despite drawing from internal medicine residency programs that are comprised of 50% women.

Emerging data in healthcare suggests that physician gender may affect patient outcomes (1). This is particularly important in light of continued sex disparities in patient outcomes for many disorders. For instance, among patients presenting with acute coronary syndromes (ACS), women are consistently less likely than men to be referred for appropriate treatment during an acute myocardial infarction (AMI) and are less likely to receive guideline-recommended therapies following their hospitalizations. Underlying reasons are likely multifactorial and incompletely understood, but they relate, at least in part, to biological sex and/or gender differences in disease presentation, pathophysiology, and treatment responses as well as under-representation of female subjects in clinical trials. Additionally, gender patient-provider discordance has been proposed as a potential factor contributing to these observed disparities. In this context, we reviewed the limited data available on the association of patient-physician gender concordance with patient outcomes and preference to identify important knowledge gaps and formulate recommendations to address some of these areas.

The Cardiovascular Disease in Women Section of the American College of Cardiology conducted a systematic review of studies examining patient-provider sex/gender concordance published in English from 2009 to 2019. A total of 872 potential titles were identified and screened and 13 studies were found eligible for inclusion. Of these, 8 studies examined patient "outcomes" and 5 studied patient "preferences." Table 1 summarizes key characteristics and outcomes for each of the included studies. Among the 8 studies that examined patient outcomes (Table 1, top), 6 found that "patient-provider gender *concordance*" influenced clinical outcomes. By contrast, of the 5 studies that examined patient preferences

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the Author Center.

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- ↑ diversity in our workforce pipeline
- Change the culture of cardiology to be more female and family friendly
- ↑ female representation in leadership roles
- ↑ sex- and gender-specific education in medical training
- ↑behavioral health and patient centered communication training

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JGIM Journal of General Internal Me...
@JournalGIM

Black patients are more likely to trust & accept recommendations from black physicians. Patient centered communication lessens but does not eliminate the impact of race. Training more minority physicians may help reduce disparities in health care. @somsaha rdcu.be/b081N

Fig. 1 Actors portraying physicians.

Black patients more likely to agree to open heart surgery if recommended by Black vs White physician

Saha. J Gen Int Med. 2020

Enroll women in clinical trials….From the bedside and from your clinics!

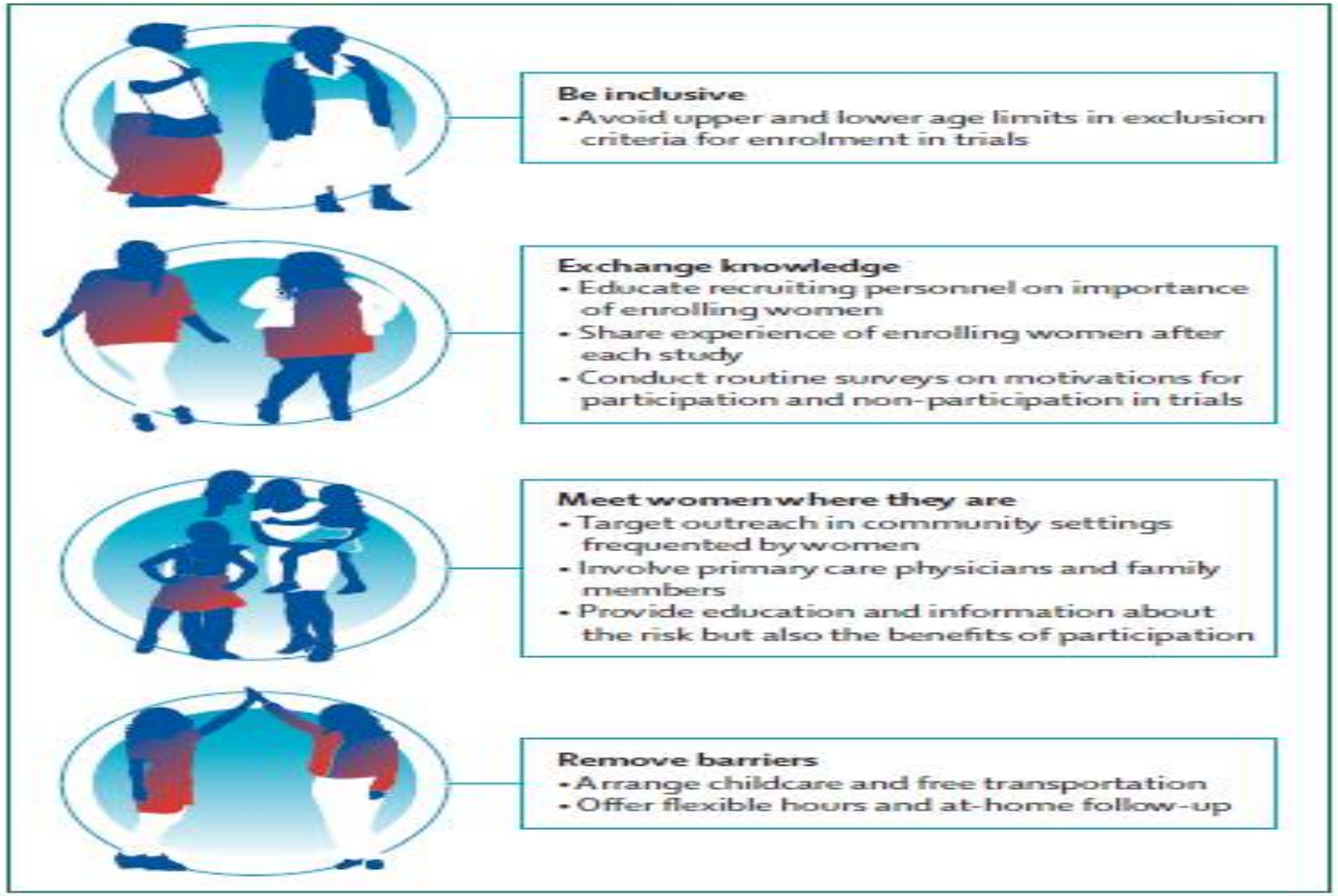

Figure 7: Strategies to increase the proportion of women in cardiovascular clinical trials

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Solutions for Equitable Care for Women

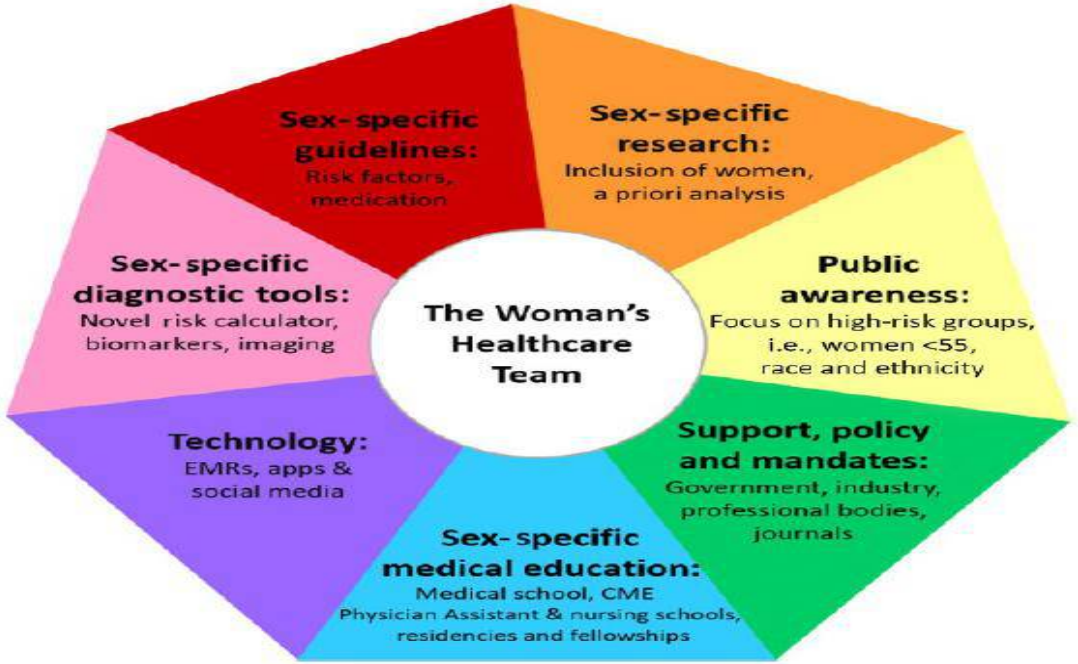

FIGURE 5 Contemporary Solution for Equitable Care and to Improve Cardiovascular Outcomes in Women. CME, continuing medical education; EMRs, electronic medical records. *Adapted with permission from [67].*

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Take Home Points

- Cardiovascular disease remains the leading cause of death in women worldwide
- With regard to CVD subtypes, ischemic heart disease is the most common cause of CVD death worldwide
- A global approach to education, screening and treatment of women is warranted
- Women have unique risk factors for heart disease across their lifespan
- Reproductive history is important for early prevention and treatment of CVD
- Psychological health and wellbeing are essential for CVD risk mitigation

Take Home Points

- Sex and gender disparities in outcomes persist, particularly in women disadvantaged by race, ethnicity, income level or educational attainment
- Sex specific impact of novel and traditional risk factors should be included for improved risk stratification in women
- Increased attention must be paid to social determinants of health, health literacy, improved adherence to sex-specific guidelines and adequate inclusion of women in research trials are necessary to address existing disparities in research and clinical care
- Optimal CV care involves partnerships among women, their communities and the academic and community-serving health systems that engage in strategic planning to redesign care to meet the needs of diverse groups of women

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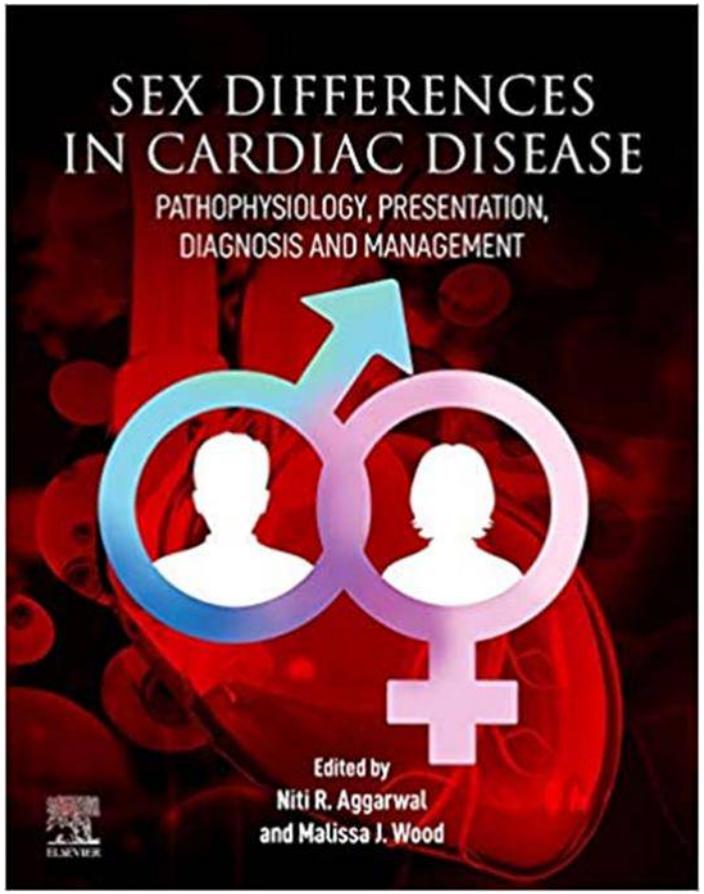

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