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Review Paper

Assessment of Cardiovascular Risks in Women and Current Preventive Approaches in Nursing

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Incidence of diabetes and heart diseases among women is gradually increasing. Both diabetes and cardiovascular diseases usually show minimal symptoms until the development of complications. These symptoms are usually overlooked by women. Nurses have an important role in reducing the risk of these diseases. The aim of this review is to evaluate the effects of diabetes, metabolic syndrome, and female-specific risk factors of heart diseases in women, to overview the preventive health style changes and responsibilities of nurses in this field through emphasizing the importance of risk factors and risk estimation.

Key words: woman, cardiovascular, risk management, lifestyle changes, risk reduction, nursing.

INTRODUCTION

Cardiovascular diseases (CVD) were determined as a risk factor for women in recent years. Heart disease is the first leading cause of death in women (Go, Mozaffarian, Roger, Benjamin, Bery, Borden, Bravata, 2013). According to the data provided by the World Health Organization, 36% of all deaths in the world will be related to CVD by the year 2020 (WHO, 2013). Heart diseases are the cause of one of every four deaths seen in women who are older than 20 years of age. Heart diseases are the leading cause of death among women in the United States, killing 292.188 women in 2009 (Kochanek, Xu, Murphy, Miniño, Kung, 2009). According to the results of the Turkish Adult Risk Factor (TARF) study, the CVD and death incidence in the last 20.5 years for the 45-74 age groups was found to be 9.5 per thousand in women (Onat, 2009a).

Cardiac diseases are considered to be more common among males, and these are perceived as men's diseases. Studies have found that women do not perceive the early symptoms and indications of heart diseases and thus don't apply to a health institution. This gender specific prejudice and lack of perception causes delays in diagnosis and treatment, and makes the problem of cardiac diseases in women even more pronounced (Bayındır Çevik, 2010).

According to the American Heart Association (AHA), (Mosca, Benjamin, Berra, Bezanson, Dolor, and Lloyd-Jones, 2011) breast cancer is the cause of death in one of every 30 American women, whereas CVD is the cause in one of every three deaths. It was determined that 90% of women have one or more cardiovascular risks. However, only one of every five women thinks that CVD is dangerous for women's health (AHA, 2014) and creating awareness (Tokgözoğlu, Aytekin, Çam and Çengel, 2010).

Risk evaluation and the determination of present risk factors is the first step in the prevention of CVD's. (Wenger, 2007).

Aim

The facts that the prevalence and mortality of CVD's in women are ever increasing, that warning symptom doesn't present themselves in certain women, and that women have less awareness on the issue compared to men make it necessary for nurses to take a more active role in evaluating the cardiovascular risk factors of women. The purpose of such endeavors has been to draw attention to the ever increasing risk of CVD and search answers for questions such as "What are the risk factors affecting the gender specific cardiac health issues of women?", and "What should the fields of responsibility that nurses should assume be in order to reduce those risk factors?"

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CARDIOVASCULAR RISK ASSESSMENT

Assessment of CVD risks during the premenopausal period and taking preventive measures are important. The aim of risk assessment in women who do not have diabetes and CVD is to determine the women for primary prevention, whereas the aim of assessment of women with DM and/or CVD is to determine the women for secondary prevention.

The American Heart Association classifies the level of CVD risks into three groups, which include high risk, risky and ideal heart health in women (Table 1).

Cardiovascular disease risk assessment tools like Framingham (Framingham Heart Study, 2014) and Reynolds Risk Score (Ridker, Buring, Rifai, and Cook, 2007; Reynolds Risk Score, 2014) can be used for risk assessment.

The Framingham risk model

The Framingham risk model is one of the most widely used risk scoring systems. According to the Framingham study, 63% of women who died from cardiovascular diseases did not display any symptoms prior to the cardiac event (Roger, Go, Lloyd-Jones, Benjamin, Berry and Borden, 2012). The Framingham risk model provides lower risk scores than the actual rate in women (Engberding, Wenger, 2008). In this model, the sum of the risk scores for age, LDL-cholesterol, HDL-cholesterol, systolic blood pressure, smoking, respectively, gives the 10 year CVD risk of the subject. Scoring for the "presence of diabetes" is available in the modified Framingham risk estimation model, which is based on LDL-cholesterol. The Framingham risk model is classified as low risk (≤%10), moderate risk (10-20%), and high risk (≥%20). The Framingham risk model gives information on both the absolute risk and relative risk. The sum of the scores in each risk category obtained from people with diabetes indicates the absolute risk. Their comparison with women in the low risk group and in the same age group, who has the same systolic blood pressure, LDL-cholesterol 100-129 mg/dl, HDL-cholesterol>55 mg7dl, are non-smokers and non-diabetics, gives the relative risk (Framingham Heart Study, 2014).

The Reynolds Risk Model

The Reynold risk score was developed for women (http://www.reynoldsriskscore.org., 2013). It was developed after a 10 year follow up period of approximately 24558 healthy women and targeted to predict the 10 year myocardial infarction and major CVD risk. Age, systolic blood pressure, total cholesterol, HDL-cholesterol, constant smoking status, high sensitive C-reactive protein (hsCRP), parental myocardial infarction history before the age of 65 are scored in the model (Ridker, Buring, Rifai and Cook, 2007).

In a CVD comparison study conducted by Cook et al. (2012) the Framingham and Reynolds risk models were used to assess 1722 women with major CVD and 1994 women without CVD. The Reynolds risk assessment model was detected to be more valid than the Framingham risk assessment model in the evaluation of CVD risks. The most important insufficiency of both the Framingham and Reynolds risk scores is that they only calculate the 10 year CVD risk. However, it is more important to determine the lifetime risk rather than the 10 year risk. It has been demonstrated that the 10 year CVD risk of a 50 year old women who has only one major risk factor is 8%, whereas the lifetime risk of the subject is 39% (Lloyd-Jones, Leip, Larson, D'Agostino and Levy, 2006). Therefore, it would be more significant for a risk determination method specific to women to provide lifetime CVD risk ratios.

RISK FACTORS

Determining the risk factors which affect women's cardiac health is an important step in raising awareness.

Diabetes

It is known that the risk of heart diseases is higher in women with diabetes compared to men. In the INTERHEART study, 26% of women with heart disease were detected to have diabetes as well (Anand, Islam, Rosegren, Franzosi, Steyn and Yusufali, 2008). According to the results of the study carried out with angiography results (2002), 31% of women with CVD had diabetes. According to the study of Aygül et al. (2009), diabetes was detected in 38% of female patients who had acute myocardial infarction (AMI). Diabetes-related heart disease incidence was found to be higher in women than men in all three studies.

Metabolic syndrome

Diabetes is the most important risk factor in the development of cardiovascular diseases. Metabolic syndrome, which is composed of metabolic and non-metabolic CVD risk factors, has risen as a new risk factor besides diabetes in the recent years (Engberding and Wenger, 2008).

The definition of metabolic syndrome in females, according to the International Diabetes Federation (IDF, 2014) is given in Table 2.

The presence of metabolic syndrome was found to be related to the risk of diabetes and cardiovascular disease development (Onat and Yüksel, 2009). In the Women's Ischemia Syndrome Evaluation-WISE study, the metabolic disorder rate was found to be 28% in women who had a normal body mass index, 5% in overweight women and 76% in obese women. In the WISE study, 780 women aged between 21-86 years were evaluated and it was found that body mass index was not independently valuable in the determination of cardiovascular disease risk, but the presence of metabolic syndrome had significant prognostic value regarding cardiovascular disease risks (Williams, Tchernof, Hunt, Wagenknecht and Haffner, 2008).

Table 1: Classification of cardiovascular disease risks in women

Risk	Criteria
High risk group	Clinically manifest CVD Clinically manifest cerebrovascular disease Clinically manifest peripheral artery disease Aneursym of abdominal aorta Advanced stage chronic renal failure Diabetes mellitus 10-y predicted CVD risk ≥ 10%
Risk group	Smoking SBP ≥120 mmHg, DBP ≥ 80 mmHg, or treated hypertension Total cholesterol ≥200 mg/dL, HDL cholesterol< 50 md/dL (1.29 mmol/L) or terated for dyslipidemia Obesity, particularly central obesity Poor diet Physical inactivity Family history (CVD occurrence <65 years among first degree relatives) Metabolic Syndrome Evidence of subclinical atherosclerosis (egg. carotis plaque or VIT) Poor exercise capacity Systemic autoimmune collagen-vascular disease (egg, lupus or romatoid arthritis) Gestational diabetes, pregnancy or gestational hypertension
Ideal cardiovascular health	Total cholesterol < 200 mg/dL (untreated) BP< 120/80 mm Hg (not treated) Fasting plasma glucose 100 mg/dLHg (not treated) Body mass index <25 kg/m ² Non-smoker Physical inactivity at goal for adults exercise: ≥150 min/week moderate exercise, ≥75 min/week vigorous exercise or combination Healthy diet (like DASH)

CVD: cardiovascular disease SBP: systolic blood pressure DBP: diastolic blood pressure
DASH: dietary approaches to stop hypertension HDL: high density lipoprotein VIT: vascular intima thickening

Reference: Mosca et al. (2011).

Hormonal Changes

Cardiovascular disease risk is known to increase during the post-menopausal period due to hormonal changes (Yıldırır, 2010). Studies, which indicate the beneficial effect of hormone Replacement therapy (HRT) on cardiovascular disease development during the post-menopausal period are available (Salpeter, Walsh, Greyber and Salpeter; 2006; Yıldırır, 2010).

In the 20 year follow up of the Nurses' Health Study, which was an observational study conducted with more than 70.000 patients aged between 30-55, HRT was found to reduce risk by 40% in major coronary events and it was detected to increase stroke risk by 35%. When premenopausal states continue in women, CVD symptoms are seen 10-15 years later than men, around 65 years of age (Yıldırır, 2010). According to the results of The Women's Health Initiative (WHI) study, which is a randomized controlled study investigating the effect of HRT on CVD risk among 64.500 post-menopausal women during a period 12 years, HRT was detected to increase CVD risk especially during the first year (Salpeter, Walsh, Greyber, Salpeter 2006). The results of observational studies carried out during the recent decade suggested that post-menopausal HRT protected women from cardiovascular events and reduced coronary artery disease by 35-50% (Yıldırır, 2010). However, recent randomized studies failed to verify the data obtained from observational studies and indicated that HRT is not beneficial both in primary and secondary prevention (Salpeter, Walsh, Greyber, Salpeter 2006; Yıldırır, 2010). New studies investigating the effects of hormonal changes on heart disease in women are needed.

Table 2: Criteria of metabolic syndrome for female gender according to IDF

Risk Factor	Definition criteria
Waist circumference	≥80 cm
+ At least two of the following	
Blood pressure	≥ 130 ≥ 85
Fasting plasma glucose	≥ 100 mg/dl
Plasma triglycerides	≥ 150 mg/dl
HDL-cholesterol	< 50 mg/dl

Reference: International Diabetes Federation, (2014)

Smoking

Smoking is the most important preventable risk factor in women. Smoking is less prevalent among women compared to men. However, the smoking rates of women have significantly increased in time. Women have increased access to tobacco due to an increase in their educational level and economic status, which may play a role in increasing the prevalence of smoking among women. On the other hand, an increase in educational levels decreases smoking in women. Smoking is more harmful in women than in men. CVD-related mortality is higher among smoking women than men (Grundtvig, Hagen, Amrud and Reikvam; 2011). In the INTERHEART study, it shows that the highest smoking rates of women compared to men contribute to the delayed development of CVDs in women (Anand, Islam, Rosegren, Franzosi, Steyn and Yusufali, 2008). However, studies indicate that the smoking rates of women are gradually increasing. (Onat, Ayhan, Ergenç, Can and Barlan, 2009). In the INTERHEART study, it was found that women who smoke 1-19 or more cigarettes per day have 5 times higher risk in women, smoking cessation rapidly reduces the MI risk (Anand, Islam, Rosegren, Franzosi, Steyn and Yusufali, 2008). Smoking and oral contraceptives have a synergistic effect on CVD risk. While the increase of blood volume and cardiac output leads to the worsening of heart diseases, many of the drugs which can be used to treat this are contraindicated in pregnancy. CVD risk increases in women who have gestational diabetes (Tokgözoğlu, Aytekin, Çam and Çengel; 2010). It is known that some women smoke in order to lose weight. It has been reported that women who quitted smoking gain an average of 5 kg, whereas they rarely gain approximately 10 kilograms. Therefore, women tend to be afraid of quitting smoking (Engberding, and Wenger, 2008).

Hypertension

Hypertension is an important modifiable risk factor for cardiovascular (CV) morbidity and mortality, and is a highly prevalent condition in both men and women (Mancia, Fagard, Narkiewicz, Redon, Zanchetti and Bo'hm, 2013). However, the prevalence of hypertension is predicted to increase more in women than men (Pimenta, 2012). It was found that hypertension is less common in women until menopause, however, it is observed equally in both genders after menopause (Ong, Cheung, Man, Lau and Lam, 2007). It is known that a 4-6 mmHg reduction in diastolic blood pressure reduces CVD risk by 14% in women (Onat, 2009b).

Dietary fat intake

The main source of dietary cholesterol is food of animal origin. Saturated and Trans fat consumption is directly proportional to the LDL-cholesterol level. It was reported that poly-unsaturated fat consumption instead of saturated fat reduces CVD risk. Diets rich in mono-unsaturated fat were also shown to reduce CVD risk (Mosca, Benjamin, Berra, Bezanson , Dolor and Lloyd-Jones, 2011). In the Nurses' Health Study investigating the relationship between CVD and hypercholesterolemia, it was reported that a 2% increase in trans-unsaturated fat consumption and a 5% increase in saturated fat consumption increased CVD risk by 93% and 17%, respectively (Najafi and Sheikhvatan, 2013). This association may be related to the large consumption of complex CHO and less consumption of processed sugars (13%). Increase in sucrose consumption was detected to reduce HDL-C (Arslan, Mercanlıgil, and Özel, 2009).

The American Heart Association (AHA) recommends the fat consumption ratio not to exceed 30% in nutrition recommendations for the prevention of CVD. Fruit, vegetable, legumes, fish, fowl, unprocessed grains and fiber rich food are reported to reduce CVD risk (Mosca, Benjamin, Berra, Bezanson, Dolor and Lloyd-Jones, 2011). In the WISEWOMEN program, which was conducted in order to reduce CVD risks in women, 1021 women aged between 40-64 were evaluated and it was found that fat and fiber consumption is important in reducing the CVD risk in women (Khare, Carpenter, Huber, Bates, Cursio and Loo, 2012).

Table 3: Lifestyle changes and responsibilities of the nurse in primary prevention

Lifestyle changes	**Responsibilities of the nurse**
A healthy body weight	Determination of ideal body weight according to height and the calculation of BMI and evaluation with the guide (www.nhlbisupport.com/bmi/bmicalc.htm., 2014). • 18.5 or below: low body weight • 18.5-24.9= normal • 25.0-29.9= overweight • 30.0-34.9= obese • 35.0-40= morbid obese
Healthy nutrition	Assessment of daily nutritional habits (24 hour diet) Providing to gain the following healthy nutritional habits • To teach food pyramid by taking cultural differences into consideration • To recommend a vegetable and fruit-rich diet • To recommend to consume unprocessed grains and fiber-rich food • To recommend to eat fatty fish for at least twice a week • To recommend to eat lean meat, low fat milk or low fat dairy products • To recommend to reduce saturated fat consumption • To recommend to avoid from high cholesterol food • To recommend to minimize drinks and food rich from sugar • To recommend to choose salts, food or food with minimal salt content • To recommend to prepare and eat small dishes • To recommend to give up eating by the screen (TV, internet and PC plays) • To teach to obey these nutrition rules also out of home • To follow up body weight, physical activity and calorie consumption. • To teach the importance of knowing the content of food and drinks and to read labels. • To pull attention to unbalanced nutrition due to stress • To teach the importance of knowing calorie needs for a healthy body weight • To teach the importance of knowing the calorie content of the consumed food and drinks
Physical activity	• To provide a determination of constant exercise activity and capacity. • To recommend a moderate exercise proper for age and health status for 30 min daily and for min 5 times a week. • To recommend walking instead of using the elevator, riding a bike instead of using a car and alternative approaches like parking the car at a distance and walking etc.
Stress management	• To aid determination of negative stressors in the life of the individual • To teach stress management techniques, proper for age and health status • To recommend to use physical activity, rest, meditation, music methods
Smoking cessation	• To ask about smoking at every visit • To recommend smoking cessation to every smoker • To give an individual-specific message for smoking cessation • To assess whether the individual is ready for smoking cessation or not • To give consultation and to develop a plan for cessation. • To direct to specific programs and pharmacotherapy as nicotine replacement • To direct for prevention of inhaled smoke exposure
Yearly physical examination	• To make a physical examination once a year, regular follow up of women who have the family history of CVD and diabetes
Social support	• To use the needed social support systems in order to make lifestyle changes.
Education	• To teach cardiovascular disease risk factors and signs

References: Adapted from. Smith et al. 2011, Mosca et al., 2011; Mancia et al., 2013; Stock and Redberg, 2012.

Table 4: Lifestyle changes and responsibilities of the nurses in secondary prevention

Target	Responsibilities of the nurse
A healthy body weight BMI: 18.5-24.9 kg/m² Waist circumference:<88cm	• Primary prevention + • Lifestyle changes and metabolic syndrome screening if waist circumference ≥88 • Encourages weight control/ reduction • The initial target must be to reduce body weight by 10%.
Healthy nutrition	• Primary prevention
Lipid profile LDL-C<100md/dL If triglycerides ≥200 mg/dL, parameters except HDL-C must be <130 mg/dL	• Recommends reduction of saturated fat consumption • Lipid profile must be evaluated at every five years in a healthy woman. • Women who receive lipid lowering therapy, who have diabetes and high cholesterol must be evaluated more frequently. • Aggressive lipid management must be done for women whose triglyceride level is near the limits. • Measurements must be repeated within 5 years if cholesterol <200 mg/dl and HDL-C>40 mg/dl. • Measurements must be repeated at every 1-2 years if cholesterol is 200-239 mg/dl and HDL>40 mg/dl. • Measurements must be repeated 9-112 hours later if cholesterol is <400 mg/dl and HDL<40 mg/dl and risk factor >2 • Measurements must be repeated at every 5 years if LDL-C<130 mg/dl • Diet and exercise must be recommended if LDL-C is 130-159 mg/dl • If LDL–C is 130-159 mg/dl, clinical evaluation (medical history, family history, physical examination and laboratory findings), recommend diet, aerobic exercise (for minimum 30 min at least three times a week), weight control, risk factor control. • Cholesterol lowering therapy if LDL-C is >130 mg/dl
BP <140/90 mmHg DM or CRF<130/80mmHg	• Yearly BP control. • BP follows up for 2-4 weeks if BP is high. • Lifestyle changes (weight reduction, physical activity ↑, alcohol consumption ↓, sodium consumption ↓, and fat content ↓, recommendation of dairy products, fresh vegetable and fruit. • To recommend a physician in patients whose BP≥ 140/90 mmHg (or ≥ 130/80 mmHg for patients with DM and ARF)
Blood glucose control Normal plasma fasting glucose <100 mg/dl, HbA1c <6.5%	• FPG must be repeated at every 3-5 years for healthy individuals 45 years and above • Young women must also be added to screening in the presence of risk factors. • The glucose loading test must be done at 24-28. Week of gestation for each woman. • Evaluation of diabetes symptoms like polyuria, polydipsia, weight loss • Individual lifestyle arrangements for near normal HbA1c • Explaining the effects of weight control, glucose control and exercise on lowering blood glucose • Arrangement of diabetes care, coordination with family physician or endocrinologist.
Smoking cessation Complete cessation Prevention of environmental smoke exposure	• The same with primary prevention
Antiplatelet drugs/anticoagulants	• 80-325 mg/day if there is no contraindication • To teach the benefits and risks of aspirin use
Alcohol consumption	• To determine daily-weekly alcohol consumption, to recommend reducing alcohol consumption.
Influenza vaccine	• Influenza vaccination in patients with cardiovascular diseases.
Drug use	• To provide regular drug use. • To explain the drug interactions, alternative therapies and effects of them on diseases.

References: Adapted from Smith et al., 2011; Mosca et al.,2011; Stock and Redberg, 2012

Sedentary lifestyle

The epidemic of sedentary lifestyle increases the obesity, diabetes, and metabolic syndrome rates in women (Amin-Shokravi, Rajabi and Ziaee, 2011). Women are more predisposed to sedentary life style compared to men (Bayındır Çevik et al., 2014). Women who spent more time watching TV tended to exercise less, but the effects of TV watching and exercise on the development of obesity and diabetes were largely independent (Hamer, Weiler and Stamatakis, 2014). Sedentary lifestyle is found to be associated with obesity, age, low educational level, continuous smoking, and divorce. The risk of diabetes and CVD is known to increase with obesity and physical inactivity. A mild, regular and constant physical activity is known to reduce CVD risk (Amin-Shokravi, Rajabi and Ziaee, 2011).

Alcohol Consumption

High alcohol consumption can lead to a rise in blood pressure and triglycerides levels. It can also cause heart failure and an increased calorie intake. Consuming too many calories can lead to obesity and a higher risk of developing diabetes. Excessive drinking and binge drinking can lead to a stroke. Other serious problems associated with excessive alcohol consumption include fetal alcohol syndrome, cardiomyopathy, cardiac arrhythmia, and sudden cardiac death (Djoussé, Lee, Buring and Gaziano, 2009).

Women's higher susceptibility to depression, the fact that they follow healthy nutrition recommendations less than men do, and having a more sedentary lifestyle compared to men may be reported among the causes which increase CVD (Mosca, Benjamin, Berra, Bezanson, Dolor and Lloyd-Jones, 2011).

RISK MANAGEMENT AND NURSING

Nurses determine the risk factors a patient has through risk evaluation. Educating women on the topic of determining risk factors is important in CVD prevention. Women, who have high risk awareness, transform lifestyle changes in behavior (Wood and Gordon, 2012). Nurses can play an active role in risk management by evaluating women's information levels and initiating the primary or secondary protection process.

Primary prevention

For primary prevention, nurses must take the measures for the preservation and improvement of health and must provide education to the women who did not develop CVD (Nicholson, 2007). The education provided by nurses may focus on the arrangements regarding life style behaviors and on risk reduction. Women must be motivated for realizing the importance of these healthy and risk reducing behaviors as soon as possible. Prevention will be effective when positive lifestyle changes become continuous. CVD prevention must include positive lifestyle modifications. Lifestyle changes and responsibilities of nurses in primary prevention are shown in Table 3.

Secondary prevention

Secondary prevention involves the applications needed in the presence of diseases. In the 2011 update of the secondary prevention guidelines of the American Heart Association (AHA) and the American Cardiology College (ACC), comprehensive treatment of risk factors is reported to prolong life and improve quality of life (Douglas and Poppas, 2012).

Responsibilities of the nurses and the content of the education aimed at the prevention/delay of complications and to treat the women who have diabetes, cardiac diseases, and/or metabolic diseases are emphasized (Table 4).

Disease management

CVD secondary to diabetes and metabolic syndrome can usually be prevented or significantly delayed (Wood and Gordon, 2012; IDF, 2014). Diabetes and metabolic syndrome have a negative synergistic effect on CVD. Disease management becomes difficult due to the negative synergistic effect or increased risk factors in women with diabetes or metabolic syndrome when CVD develops. Many complications of all three diseases may be prevented through controlling blood glucose, lipid levels, hypertension and body weight (Smith, Benjamin, Bonow, Braun, Creager and Barry, 2011).

Conclusion and recommendations

The present article, which investigates the interactions between metabolic syndrome, diabetes and CVD in women, reveals that these three diseases severely threaten the health of women through interacting synergistically and increasing the magnitude of present CVDs. It is emphasized that risk factors must be detected and risk assessment must be conducted before menopause. Primary prevention in the early period is important for low risk women and secondary prevention is important in the presence of one of the mentioned diseases. Lifestyle changes, including maintaining healthy body weight, healthy nutrition, physical activity, stress management, smoking cessation, and annual physical examination, must be applied and nurses must take active roles in the protection of women's health. In addition, preparation and development of risk assessment tools, utilizing scientific guidelines for protecting women's health, and creating awareness regarding female specific risk factors is important.

Clinical implications

Nurses can initiate positive developments on women's cardiac health by risk determination and education. Therefore, nurses should play an active role in health services provided for improving women's cardiac health through primary and secondary prevention. In primary and secondary health services, risk evaluations, training, counseling, and follow up of women should be conducted according to guidelines in order to promote women's cardiac health and increase their quality of life.

What is new?

Interventions aimed at determining and reducing CVD risks are thought to be among the responsibilities of physicians. However, nurses are more in touch with women in every step of primary and secondary health services. Therefore, developing behavior change aimed at risk determination and reduction by using risk instruments designed specifically for women should be included among the responsibilities of nurses aimed at protecting the public. Nurses should engage in this responsibility.

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