To Seek the Association Between Reproductive History and Cardiovascular Disease Risk in Post Menopausal Women

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Abstract:

INTRODUCTION: Cardiovascular diseases (CVDs) are among the leading causes of morbidity and mortality worldwide. A study shows among 169 women under age 60 with a diagnosis of coronary heart disease in residents of Rochester, Minnesota. The first manifestation of coronary heart disease was angina in 95, myocardial infarction in 59, and sudden unexpected death in 15 women. (C M Beard et al, 1984).

AIM AND OBJECTIVES: To seek the association between reproductive history and cardiovascular disease risk in post-menopausal women.

METHODS: Descriptive co relational study design was used to ascertain the association between reproductive history and cardiovascular disease risk in Vijay Marie Hospital, Hyderabad. After obtaining consent a pilot study was conducted on 20 women above 35 years of age, married or unmarried, working or non-working women were selected by purposive sampling technique. Three tools were developed and checked for its content validity. Tool for socio demographic data, maternal history of women and assessment of cardiac risk factors. Data obtained was analyzed using descriptive and inferential statistics.

RESULTS: Majority of women were 55-59 years, below 10th grade, 70% working, 75% married, 50% had family members more than three, 55% joint family, 30% diabetes. There is statistically significant association between demographic data such as education (P=0.002), occupation (P=0.002), marital status (P=0.025), monthly family income (P=0.035) and heart problems at 0.05 level. The association between age and selected cardiovascular risk factors such as high cholesterol (P=0.007), heart disease (P=0.00), arthritis (P=0.00), use of tobacco (P=0.002), physical activity (P=0.047), currently on OCPs (P=0.025), heart problems (P=0.002), on cardiac medications (P=0.002), are found to be statistically significant at 0.05 level. There is also statistically significant association seen between reproductive history such as no. of abortions (P=0.001), regularity of menstruation (P=0.000), age at menopause (P=0.001) and heart problems at 0.05 level.

CONCLUSION: Selected demographic characters such as education, occupation, marital status and monthly income; cardiac risk factors such as use of tobacco, light physical activity, on HRT, OCPs and on cardiac medications; reproductive history such as no. of abortions, regularity of menstruation and age at menopause were statistically found to be significant at 0.05 level. Studies can be undertaken to see the effectiveness of alternative treatments in decreasing the postmenopausal symptoms. Studies also can be undertaken to enhance the knowledge of women through structured health education program.

Keywords: Reproductive history, cardiovascular disease, risk, post-menopausal.

I. Introduction

Menopause is the time in a woman's life when regular menstrual periods cease, due to a natural change in sex hormones, which may be accompanied by unwelcoming symptoms. Cardiovascular diseases (CVDs) are among the leading causes of morbidity and mortality worldwide. Mortality from ischaemic heart disease (IHD) is most common, followed by stroke. Reproductive history events may be risk factors for coronary heart disease among women under age 60. (C M Beard et al, 1984).

Bjarne K. et al (2004) states women with a relatively low age at menopause have an increased risk of coronary heart disease. (Xiao-Ping Yang et al, 2011) Pre-menopausal women have lower risk of CVD morbidity and mortality compared with men and post-menopausal women of the same age, indicating a possible protective effect of endogenous estrogen and progesterone.

Mariam J. Et al (2001) explains Women with more than 18 years of exposure to endogenous estrogen had a statistically significant 20% reduction in cardiovascular mortality (hazard ratio = 0.80, 95 percent CI: 0.67, 0.96) compared with those who had 13 years of exposure or less. Premenopausal women are at low risk of cardiovascular disease relative to men of comparable age and to postmenopausal women. This protection is ascribed to endogenous estrogen production in premenopausal women. Furthermore, a vast amount of observational studies suggest that hormone replacement therapy (HRT) protects postmenopausal women from cardiovascular disease.

1.1 Need for The Study

One of the major hormonal changes in women's lives is menopause. Several recent studies have indicated that women with a relatively low age at menopause have an increased risk of coronary heart disease, BK Jacobsen (2004) but few studies with

more than 100 cases have examined the impact of age at natural menopause on risk of stroke. One study indicated an increased risk in women with very early menopause (aged <40 years), whereas 2 other studies did not support any relationship. Only 1 previous study, the largest, with a total of 350 incident cases of stroke, reported results for ischemic and hemorrhagic strokes separately Bjarne K. et al (2004). As a result, there is an increased need to seek the association between reproductive history and cardiovascular disease risk in post menopausal women.
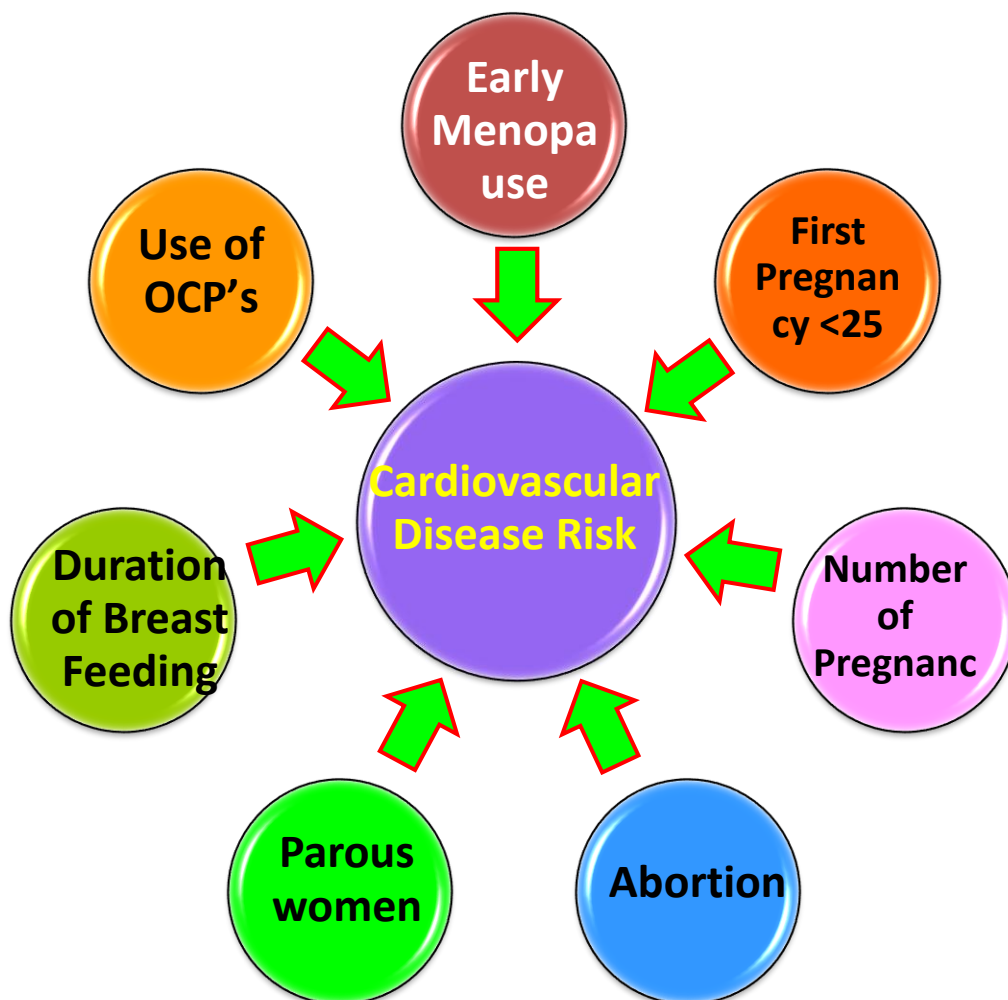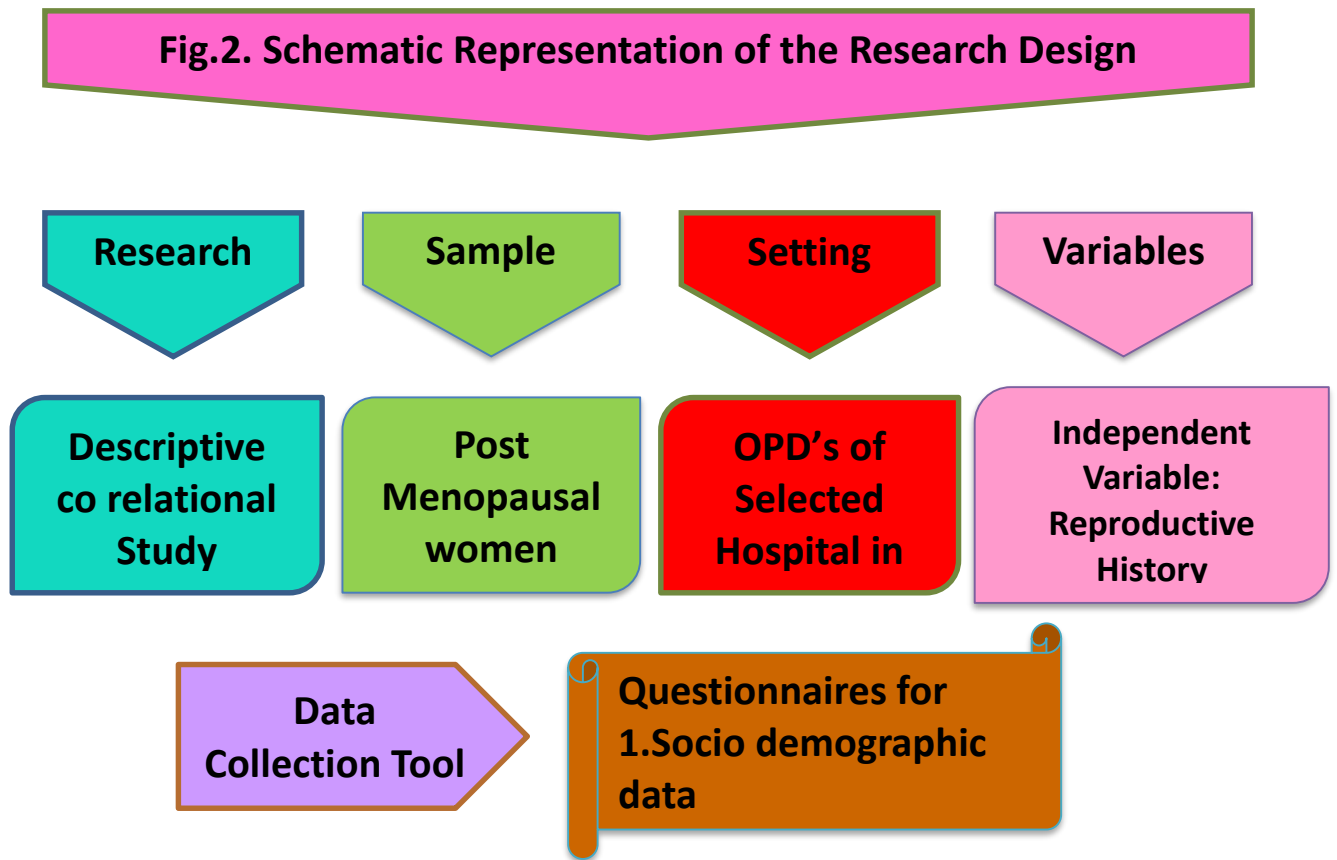
1.2 Clinical Significance

Mendis S (2011) states age at menarche was not found to influence cardiovascular disease risk, while menstrual cycle irregularity was associated with this risk. The studies pertaining to parity presented conflicting results: protection against as well as an increase in the risk of cardiovascular disease were found in parous women. Pregnancy loss appeared to be related to cardiovascular disease risk. Age at menopause proved to be the reproductive factor most clearly related to cardiovascular disease risk.

1.3 Objectives:

To seek the association between reproductive history and cardiovascular disease risk in post menopausal women.

Fig.1 Conceptual Framework for Reproductive Health as a Risk Factor for Cardiovascular Disease

Fig.2. Schematic Representation of the Research Design

Research

Descriptive co relational Study

Sample

Post Menopausal women

Setting

OPD's of Selected Hospital in

Variables

Independent Variable: Reproductive History

Data Collection Tool

Questionnaires for 1.Socio demographic data

II. Methodology

2.1 Research Design: Descriptive corelational

2.2 Population: Post Menopausal Women

2.3 Sample size: 20

2.4 **Sampling Technique:** Purposive

2.5 Setting: OPD's of selected hospital in Hyderabad, India

2.6 Variables:

Independent Variable: Reproductive history.

Dependent Variable: Cardiovascular disease risk

2.7 Data Collection Tools: 1. Questionnaire on demographic variables of participants

2. Reproductive history of women 3. Cardiac Risk Factors

2.8 Content Validity: obtained from subject experts

2.9 Consent: obtained from hospital administration and participants

2.10 Sampling Criteria:

Inclusion Criteria:

- ✓ Participants who are of age above 35 years.
- ✓ Menopause for more than one year
- ✓ Women who are available at the time of data collection
- ✓ Women who are willing to participate in the study.

III. Results

3.1 Description of sample characteristics:

Majority of sample (35%) are in the age group of 55-59 yrs, (70%) are below 10th standard, (70%) are working (75%) are married, (60%) has monthly family income of Rs.15,000-20,000, (50%) population has 3-5 and six and above children, (55%) has joint family. Majority (40%) of women had BMI as ideal weight with mean of 22.67 and SD of 5.21. Majority (30%) of the sample had medical history of diabetes mellitus and hypertension. Majority (50%) of the sample had family history of diabetes mellitus, (40%) had hypertension. Majority (65%) sample had normal blood pressure, and (70%) of the sample had above normal fasting blood sugar.

3.2 Findings related to Maternal History:

Majority (85%) of women age at menarche was below 14 years, (35%) of women had 2- 5 pregnancies, (70%) had nil abortions, (55%) of women had 1-3 deliveries, (50%) of women had 1-3 children, (55%) of them had less than 5 days of menstrual period, (90%) of the women had regular menstruation, (70%) of the women age at menopause was more than 50 years, (50%) of the women had duration of menopause for 1-4 years.

3.3 Findings related to Cardio Vascular Disease Risk Practices:

Majority of women (85%) do not use tobacco, (55%) do light physical activity, (40%) of them fed the babies for 6 months, (70%) were not on Hormone replacement therapy, (75%) did not take OCPs, (85%) of them did not have any heart problems and were not on cardiac medication. The association between age and selected cardiovascular disease risk factors such as high cholesterol (P value 0.007), heart disease (P value 0.00), arthritis (P value 0.00), liver disease (P value 0.00) and kidney diseases (P value 0.00) with a P value of less than 0.05 level indicates there is a significant association between age and selected cardiovascular disease risk factors.

TABLE (1) CHI SQUARE SHOWING ASSOCIATION BETWEEN DEMOGRAPHIC VARIABLES AND HEART PROBLEMS OF POST MENOPAUSAL WOMEN

Variable	No (20)	%	P Value
Education			
< 10	14	70	
10-12	3	15	0.002
Graduate	3	15	Significant
Occupation			
Working	14	70	0.002
Non working	6	30	Significant
Marital Status			
Unmarried	0	0	
Married	15	75	0.025
Widow	5	25	Significant
Monthly Family Income (Rs)			
< 5000	0	0	
5000-15000	3	15	0.035
15000-20,000	12	60	Significant
20,000-25,000	5	25	

TABLE (2) CHI SQUARE SHOWING ASSOCIATION BETWEEN REPRODUCTIVE HISTORY AND HEART PROBLEMS OF POST MENOPAUSAL WOMEN

Variable	No (20)	%	P Value
No. of abortions			
Nil	15	75	0.001
one-3	5	25	Significant
> 4	0	0	
Regularity of menstruation			
Regular	18	90	0.000
Irregular	2	10	Significant
Age at menopause			
<40 yrs	1	5	0.001
41-49	5	25	Significant
>50 yrs	14	70	

IV. Discussion

Present study reveals there is a statistically significant association between number of abortions (P Value 0.00), regularity of menstruation (P Value 0.00) and age at menopause (P Value 0.01). these findings are in consistent with de Kleijn MJ, et al (1999) who studied *Reproductive history and cardiovascular disease risk in postmenopausal women: a review of the literature* explains parity presented conflicting results: an increase in the risk of cardiovascular disease were found in parous women. Pregnancy loss appeared to be related to cardiovascular disease risk. Age at menopause proved to be the reproductive factor most clearly related to cardiovascular disease risk. Present study also reveals (15%) of the sample had high blood pressure with a P value of (0.00) which is in agreement with V.Brezina, et al (1994) explains in a study, *Coronary heart disease risk factors in women*, Elevated cholesterol and elevated blood pressure are major risk factors, and diabetes seems to have a stronger impact on risk in women than in men. Low socio-economic class

is a stronger risk factor for women than for men and the double loads of career and family seem to increase risk for women.

V. Recommendations

1. Comparative study can be done to see the effect of relaxation exercises to decrease the symptoms.

2. Studies can be undertaken to see the effectiveness of alternative treatments in decreasing the postmenopausal symptoms.

3. Studies also can be undertaken to enhance the knowledge of women through structured health education program.

4. Study can be replicated on a larger sample for generalization

VI. Limitations

1. Women who were attending the OPD clinics in Vijay Marie Hospital, Hyderabad

2. Women in the age group of above 35 years, married or unmarried and working or non working women.

3. Assessment of women is limited to the written response as elicited by structured questionnaire.

VII. Conclusion

1. Majority of the post menopausal women are diabetics and on light physical activity which are the risk factors for cardiac diseases.

2. Demographic variables such as education, occupation, marital status, monthly family income found to have statistically significant association at 0.05 level.

3. Maternal factors such as number of abortions, regularity of menstruation and age at menopause found to have statistically significant association at 0.05 level.

References

[1] Asbury, E.A., Chandrruangphen, P., & Collins, P. (2006). The importance of continued exercise participation in quality of life and psychological well-being in previously inactive postmenopausal women: a pilot study. Menopause, 13, 561-567.

[2] Bonow RO, Smaha LA, Smith SC, Jr, Mensah GA, Lenfant C. World Heart Day 2002: the international burden of cardiovascular disease: responding to the emerging global epidemic. Circulation. 2002;106:1602–05

[3] Carmody, J., Crawford, S. & Churchill, L. (2006). A pilot study of mindfulness-based stress reduction for hot flashes. Menopause, 13, 760-769.

[4] Shannon M.Duff. Effect of Physical Activity on Menopausal Symptoms in Non Vigorously Active Postmenopausal Women. Feb.2008

[5] C M Beard et al. Reproductive history in women with coronary heart disease. A case-control study. American Journal of Epidemiology. 08/1984; 120(1):108-14.

[6] Colditz GA, Willett WC, Stampfer MJ, et al. Menopause and the risk of coronary heart disease in women. N Engl J Med1987;316:1105–10.

[7] Col NF, Guthrie JR, Politi M, Dennerstein L. Menopause. 2009 May-Jun;16(3) 453-7.

[8] Erlik,Y., Meldrum, D. R., & Judd, H. L. (1982). Estrogen levels in postmenopausal women with hot flashes. Obstetrics and Gynecology 59, 403–407.

[9] *Gordon T, Kannel WB, Hjortland MC, et al. Menopause and coronary heart disease: the Framingham Study.* Ann Intern Med1978;89:157–*61.*

[10] Innes KE, Selfe TK, Vishnu A. Mind-body therapies for menopausal symptoms: a systematic review. 2010 Jun;66(2):135-49. Epub 2010 Feb 18.

[11] Kannel WB, Hjortland MC, McNamara PM, et al. Menopause and the risk of cardiovascular disease: the Framingham Study. Ann Intern Med1976;85:447–52.

[12] Kotz, K., Alexander, J.L., & Dennerstein, L. (2006). Estrogen and androgen hormone therapy and well-being in surgically postmenopausal women. Journal of Women's Health, 15, 898-908.

[13] Lisabeth LD, Smith MA, Brown DL, Uchino K, Morgenstern LB. Family history and stroke outcome in a bi-ethnic, population-based stroke surveillance study. *BMC Neurol*2005 5:20.

[14] Maya Beiser: A predictive instrument for coronary artery aneurysms in Kawasaki disease. US Multicenter Kawasaki Disease Study Group. Am J Cardiol. 1998;81(9):1116.

[15] DL Brown. Primary versus secondary ovarian malignancy. Radiology. 2001 Apr; 219 (1);213-8.

[16] Murabito JM, Anderson KM, Kannel WB, Evans JC, Levy D. Risk of coronary heart disease in subjects with chest discomfort: the Framingham Heart Study. Am J Med. 1990 Sep;89(3):297-302.

[17] Seshadri S, Beiser A, Pikula A, Himali JJ, Kelly-Hayes M, Debette S, DeStefano AL, Romero JR, Kase CS, Wolf PA. Parental occurrence of stroke and risk of stroke in their children: the Framingham study. Circulation. 2010 Mar 23; 121(11):1304-12.,

[18] Age at natural menopause and risk of ischemic stroke: the Framingham heart study. Stroke.2009 Apr; 40(4):1044-9

[19] Lisa G Gallagher et al. Reproductive history and mortality from cardiovascular disease among women textile workers in Shanghai, China. Int J Epidemiol. 2011 December; 40(6): 1510–1518.

[20] Mahendru AA. A longitudinal study of maternal cardiovascular function from preconception to the postpartum period. J Hypertension. Int. 2014 Apr; 32(4): 849-56.

[21] Cardiovascular disease in menopause: does the obstetric history have any bearing? Menopause International. 2013 Sep;19(3):115-20.

[22] McMillan, T. & Mark, S. (2004). Complimentary and alternative medicine and physical activity for menopausal symptoms. Journal of the American Medical Women's Association, 59, 270-277.

[23] Saensak S. et al Effectiveness of a modified version of the applied relaxation technique in treatment of perimenopausal and postmenopausal symptoms. International Journal of Womens Health. 2013 Nov 5;5:765-71.

[24] Xiao-Ping Yang et al, Estrogen, hormonal replacement therapy and cardiovascular disease. Curr Opin Nephrol Hypertens. 2011 March; 20(2): 133–138.