FREQUENCY OF CORONARY HEART DISEASE RISK FACTORS AMONG NURSES

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ABSTRACT

Objectives: To find out frequency of various risk factors for coronary heart diseases in nurses.

Methodology: This was a cross-sectional study. Nurses working in three shifts at Lady Reading Hospital, Khyber Teaching Hospital, Nursing school of Lady Reading Hospital Peshawar, were included in the study. All participants were interviewed in detail including their family history, past medical history, smoking and dietary history. Pulse, blood pressure, body mass index (BMI) and waist: hip ratio was determined. Their random blood sugar and total cholesterol was checked. Data was analyzed for cardiovascular risk factors using SPSS version 16.

Results: A total of 165 nurses were screened and interviewed. Mean age was 40.75 ± 8.577 years**.** Mean BMI was 28.80±4.77**.** Mean systolic BP was 124.82±20.91 mm Hg, while mean diastolic BP was 82.45±13.07 mm Hg. Mean random blood sugar was 128.39±52.74 mg /dl. Diabetic nurses were 18(10.9%),hypertensive nurses were 31(18.8%), nurses having high cholesterol were 4(2.4%), nurses having documented CAD were2(1.2%), other than above risk factors or conditions were present in 34(20.6%) of the nurses, not having any of the mentioned risk factors or diseases were present in 76(46.1%). Nurses not having any regular exercise schedule were 104 (63%).

Conclusion: We noticed that among modifiable risk factors hypercholesterolemia, diabetes and hypertension were less frequent in nurses while obesity, physical inactivity and sedentary life style with more duty hours and smoking were more prevalent.

Key Words: CAD risk factors, BMI, waist/Hip ratio, smoking, hypercholesterolemia.

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INTRODUCTION

"Nurses are selling a product, and that product is health. The best salespersons are those who are genuinely committed to their product and model its benefits". Therefore, it is important that nurses realize that their own health practices can have a profound effect on the consumers of their services and nurses share a professional commitment to provide education and to advocate for and to role model healthy lifestyles[1]. When needed, nurses should use available programs to assist them in changing their own risky behaviors[2]. It can be expected that nurses who know their risk factors and who follow healthy lifestyle behaviors will be more effective in these counseling roles[3].

Population campaigns have led to decreases in the prevalence of smoking, hypertension, and cholesterol concentrations[4]. Countries with restricted resources need a cost effective cardiovascular preventive strategy, so that candidates for preventive interventions can be stratified by absolute level of cardiovascular risk and priority should be given to those at higher risk of complications[5,6]. Interheart study (an international case-control study examining risk factors for initial MI in 52 countries, including 12,000 cases of initial MI and 14,000 controls) demonstrated that over 90% of global MI risk can be attributed to 9 modifiable risk factors (smoking, diabetes mellitus, lipids, central obesity,

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hypertension, diet, physical activity, alcohol consumption, and psychosocial factors)[7].

In the Nurses Health Study[8], a total of 84,129 women were assessed for healthy lifestyle factors, including absence of current smoking, half an hour or more per day of moderate or vigorous physical activity, body mass index (BMI) of less than 25 kg/m2, a dietary score in the top 40% (included diets with lower amounts of trans-fats, lower glycemic load, higher cereal fiber, higher marine omega-3 fatty acids, higher folate, and higher polyunsaturated to saturated fat ratio), and drinking one-half glass or more of wine per day (or equivalent alcohol consumption). When 3, 4, or 5 of these healthy lifestyle factors were present, risk for coronary heart disease over a 14-year period was reduced by 57%, 66%, and 83%, respectively.

Contrary to this a recent study by Miller et al examined knowledge of obesity and associated health risks among a sample of self-reported overweight/obese nurses. Significant areas of knowledge deficits regarding health consequences were identified; for example, most (96%) could identify cardiovascular diseases as a negative outcome of obesity, however, 26% did not identify diabetes, and 90% omitted hyperlipidemia as a health consequence. Moreover, more than half reported that they personally lacked the discipline to make healthy behavior choices[9]. In the subset of Preventive Cardiovascular Nurses Association (PCNA) women with a family history of premature heart disease, 20% reported a history of hypertension, 23% reported a history of dyslipidemia, and 17% were obese (BMI Q 30)[10].

Therefore, the purpose of this study was: to know prevalence of cardiovascular risk factors among nurses of Lady Reading Hospital, Khyber Teaching Hospital and Nursing school of Lady Reading Hospital Peshawar, expected to have knowledge and awareness of their personal risk factors for coronary artery diseases(CAD).

METHODOLOGY

This was a cross-sectional study involving nurses (working in three shifts at Lady Reading Hospital, Khyber Teaching Hospital, Nursing school of Lady Reading Hospital Peshawar) recruited in Peshawar Heart Study (PHS), were included in the study. Nurses having pregnancy and younger than 18 years were excluded from the study. This study is subset of Peshawar heart study,and sample size was calculated according to Peshawar Heart Study. Convenient sampling technique was used.

All were interviewed in detail, their bio data noted, BMI,waist hip ratio, past and current medical status including Diabetes, Hypertensive status, High Cholesterol status, and history of CAD documented. Family history of CAD, Smoking history noted. Dietary pattern, daily life routine with detail of daily exercise and prayers detail were noted.

Hypertension was defined according to the JNC 7 Criteria[11]. Diabetes was defined according to WHO Criteria[12] (non-fasting blood glucose $\geqslant$ 140 mg/dl or known history of diabetes). History of smoking was considered to be positive on the basis if $\geqslant$ 5 cigarettes were taken per day for $\geqslant$ 6 Months. Hypercholesterolemia was defined according to ATPIII guidelines[13]. Family history of CAD was considered to be positive if first degree relative had CAD at the age (men < 50 and women < 60). Blood pressure was checked using mercury sphygmomanometer in sitting position with supported left arm. 12 Lead ECG was performed using BTL-085 machine. Random blood sugar was checked using Abott Glucometer (Medisence Optium) by finger prick method. Serum random cholesterol was checked using Accutrend GC portable device (Roche) by finger prick method.

Data was analyzed for cardiovascular risk factors i.e hypertension, diabetes, smoking, Body mass index, waist:hip ratio, exercise, hypercholesterolemia and family history using SPSS Version 16.

RESULTS

Total of 165 nurses were screened and interviewed. Mean age was 40.75 ± 8.577 years. Male nurses were 11 (6.7%), while females were 154 (93.3%). Current smoker was 01(0.6%) while 164(99.4%) were non smokers. Mean BMI was 28.80±4.77 and hip girth ratio was 103.79±9.76. The detail of baseline characteristics is shown in Table 1.

Food pattern analysis showed that 92.7% of nurses were having meal at their homes and 7.3% of nurses were having meals in canteen or restaurant .And 64.2 % were eating regular snacks during duty hours. The most frequent drink was black tea with milk and sugar followed by a combination of green tea/soft drinks. Weekly consumption of vegetables was less than 1000 grams in 60.61 %,and fruit consumption was less

than 1000 grams in 64.24 % of nurses. Weekly meat consumption was less than 500 grams in 72.7 % of nurses studied. 45 (27.3%) nurses were regularly consuming fish more than 500 grams a week (Table 2).

All participants were asked about their daily routine life activities and were interviewed in detail. It was found that 126 (76.4%) were offering prayers on regular basis while one (0.6%) reported no prayers at all. About 58.8 % of nurses were doing recitation of Holy Quran for about 30 minutes daily and 47% were not doing any such activity.(Table 3). 63 of nurses were not performing any regular exercise. Most of the nurses (77 %)had a mobile or standing job. Only 37% of nurses were doing regular exercise 59(35.8 %) simple walk and 2(1.2%) were doing jogging(Graph 2).

Table 1: Baseline Characteristics

Baseline Characteristics	Frequencies
Total number of nurses	165
Mean Age	40.75 ± 8.577
Male	11 (6.7%)
Female	154 (93.3%)
Mean height in cm	153.49±6.732
Mean weight in Kg	68.65 ± 11.60
Mean Waist	93.18±10.70
Mean Hip-Girth	103.79±9.76
BMI	28.80±4.77
Pulse	70.85±10.62
Systolic BP	124.82±20.91
Diastolic BP	82.45±13.07
Mean working hours per day	7.04 ±1.098
Past Medical History	
Diabetic	18(10.9%)
Hypertensive	31(18.8%)
High Cholesterol	4(2.4%)
CAD	2(1.2%)
Others	34(20.6%)
None	76(46.1%)
Family history of CAD	55 (33.3%)
Smoking	
Current smoker	01(0.6%)
Non-smoker	164(99.4%)
RBS	128.39±52.74
Cholesterol	181.19±30.52

Only 31(18.8%) nurses were hypertensive. Mean systolic BP was 124.82±20.91 mm Hg while mean diastolic BP was 82.45±13.07 mm Hg. Systolic BP more than 140 mmHg was present in 12 (05.76%) while 11 (05.28%) had diastolic BP more than 90 mm Hg. Random Blood cholesterol was 181.19±30.52 mg / dl. Mean random blood sugar was 128.39±52.74 mg /dl. (Graph 1). Diabetic nurses were 18(10.9%), hypertensive nurses were 31(18.8%), nurses having high cholesterol were 4(2.4%) ,nurse having documented CAD were 2(1.2%) , other than above risk factors or diseases were present in 34(20.6%)of the nurses and not having any of the

Table 2: Dietary Pattern of Nurses

Type of Food Stuff	Frequencies
Type of drinks in office (in routine)	
Green Tea	2(1.2%)
Black Tea with milk	82(49.7%)
Cold drinks	1(0.6%)
None	79(47.9%)
Place of launch	
Home	153 (92.7%)
Hotel etc.	12 (7.3%)
Snack intake during office hours	
Yes	106 (64.2%)
No	59 (35.8%)
Breakfast	
Eggs Paratha	63(38.2%)
Eggs/butter Toast	1(0.6%)
Tea only	1(0.6%)
None	9(5.5%)
Roti + Tea	91(55.2%)
Weekly meat consumption in grams	
≤ 500	120(72.7%)
≥ 500	45 (27.3%)
Weekly vegetable consumption in grams	
≤ 1000	100(60.61%)
≥1000	65 (39.39%)
Fruit intake per week in grams	
≤ 1000	106(64.24%)
≥1000	59 (35.76%)
Fish intake per week	
≤ 500	162(98.18%)
≥ 500	03 (1.81%)

Graph 1: Mean Blood Pressure in Nurses

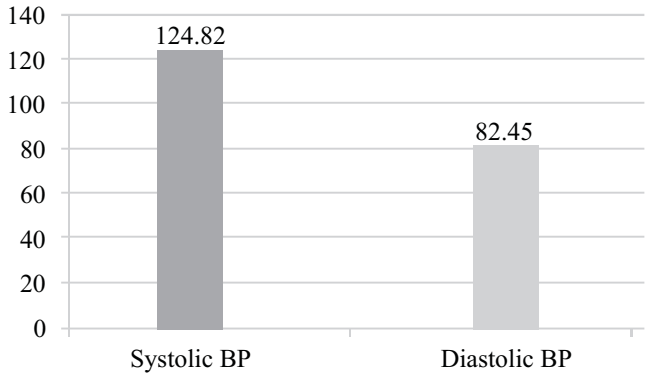
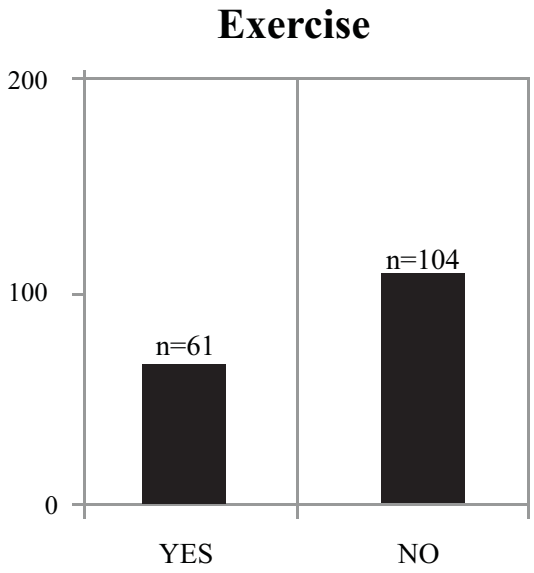


Table 3: Daily routine in Nurses

Working Style	
Sitting	22(13.3%)
Standing	29(17.6%)
Roaming	98(59.4%)
Sitting + Standing	16(9.7%)
Means of going to office	
Personal car	21(12.7%)
Motor Cycle	13(7.9%)
Public Transport	77(46.7%)
Walk	54(32.7%)
Exercise	
Yes	61 (37%)
No	104 (63%)
Type of Exercise	
Walking	59(35.8%)
Jogging	2(1.2%)
Duration of exercise	
≤30 min	144(87.27%)
≥30 min	21 (12.72%)
Regularity of prayers	
Regular	126(76.4%)
Irregular	38(23.0%)
Not Praying	1(0.6%)
Daily recitation of Holy Quran	
15 min- 1/2 hour	97(58.8%)
more then half hour	13(7.9%)
Occasional	8(4.8%)
None	47(28.5%)

Graph 2: Frequency Of Exercises in Nurses



mentioned risk factors or any diseases were present in 76(46.1%).Current medical status is shown in Table 1. Family history of CAD were present in 55 (33.3%).

DISCUSSION

In this population based study we evaluated the risk factors for CAD in 165 nurses as representative of nurses community.

In our study, mean age was 40.75 ± 8.577. This was lower as compared to a study by Joan M et al on nurses , where mean age was 47.4 ± 8.7 years[10]. In another study by Abuissa H et al, the mean age of cardiologists was more than our study i.e. 48.6 ± 8.1 years[3]. The mean ages in the four groups of Peshawar heart study were 42.95 ± 8.29 years in the teacher group[14], 30.33 ± 7.001 years for the group of doctors[15], 62 years for the prisoner[16] and 32 + 7.7 years for the journalists[17].

In our study mean BMI in nurses was 28.80 ± 4.77. Which is more as compared to other 4 groups of Peshawar heart study, mean BMI was 26.11 ± 4.53 Kg/m^2 in teachers[16], 26.52 ± 4.59 in prisoners[16], 24.69 ± 4.73 in doctors[15] and 25.68±4.78 in journalist[17]. In the study by Joan M et al on nurses most had a BMI of less than 30 (77.3%)[17].

In our study total 18(10.9%) patients were diabetic which is significantly higher compared to 3% reported by Joan M et al[10]. This was also higher compared to the study by A Jabar on teachers, where only out of 4% (n=7) were diabetic[14]. The mean random blood sugar level in our study was 128.39 ± 52.7 mg/dl ,this was high compared to the study by Qureshi SQ on doctors , where mean random blood sugar was 95.79 ± 24.57 mg/dl[15]. In a study by Hafizullah M on prisoners, mean random blood sugar was 135 ± 4.93 mg /dl which is comparable to our values[16]. In study by Fawad A on journalist, the level was lower with mean random blood sugar of 98.28 ± 32.12, as compared to our study[17].

Mean blood cholesterol was 181.19 ± 30.52 and cholesterol more than 180 mg/dl was noticed in 4 (2.4 %) nurses in our study. Which is lower than in teachers where 20.68 %(n=36) had cholesterol of ⩾ 180mg /dl[14]. Mean blood cholesterol is comparable in prisoners where mean random blood cholesterol was 178.91 ± 29.12 mg/dl[16]. In doctors and journalists mean Random Blood cholesterol was lower as compared to our study i.e. 163.97±27.93 mg/dl[15] and 158.53 ± 20.31 mg%[17] respectively. In the study by Joan M et al a history of dyslipidemia was present in (15.4%) nurses[10]. Dyslipidemia was present in 28% in cardiologists[18], 25% in nurses in nurses health

study -2 (NHS2)[20] and in 36% of subjects in Behavioral risk factor surveillance system. 2003 (BRFSS)[19].

We found a very low (n=31,18.8%) percentages of nurses with systolic BP more than 140 mmHg or diastolic BP more than 90 mm Hg. It is lower as compared to teachers where 33.33 % (n=58) had systolic blood of ⩾ 140 mmHg and 59.77 % (104) had their diastolic pressure ⩾ 90 mmHg[14]. In study by Joan M et al, hypertension was present in (17.1%) [10], which is close to the 18.8 % values of our study .Slightly higher values were observed in Nurses Health Study-2[20] and BRFSS[19] women ,where hypertension was present in (21%) and (26%) respectively. The result in our study (18.8%) was comparable as reported for cardiologists(14%)[14].

In this study, family history of CAD were present in 55 (33.3%). Which is lower in teachers, where family history of CAD was positive in 18.96% (n=33)[14]. It is comparable in journalist where family history of cardiovascular disease was present in 30% (n=46)[17]. While Joan M et al reported family history of CAD in 20% of nurses[10].

Food pattern analysis showed that 92.7% of nurses were having meal at their homes .It was noted that 7.3% of nurses were having meals in canteen or restaurant as compared to 37% of doctors[15]. And 64.2 % of nurses as compared to 76% of doctors[15] were eating regular snacks during duty hours. The most frequent drink was black tea with milk and sugar followed by a combination of green tea/soft drinks. The same pattern was observed in doctors[15]. Weekly consumption of vegetables was less than 1000 grams in 60.61 % of nurses as compared to 88 % in doctors[15], and fruit consumption was less than 1000 grams in 64.24 % of nurses as compared to 78 % in doctors[15]. Weekly meat consumption was less than 500 grams in 72.7 % of nurses as compared to 75% in doctors[15]. Out of 165 nurses 45 (27.3%) nurses as compared to 5(2.4%) doctors were regularly consuming fish more than 500 grams a week[15].

All participants were asked about their daily routine life activities and were interviewed in detail. It was found that 126 (76.4%) were offering prayers on regular basis while one (0.6%) reported no prayers at all. Which is comparable to doctors as 157 (75.5%) of doctors[15] were offering prayers on regular basis while nine (4.3%) doctors reported no prayers at all. About 58.8 % of nurses were doing recitation of Holy Quran for about 30 minutes daily and 47% were not doing any such activity.This trend was little lower in doctors where 45 % of doctors were doing recitation of Holy Quran for about 30 minutes daily and 50% were not doing any such activity[15].

Physical inactivity in nurses was more than teachers where in 42% percent of the subjects, physical inactivity was reported.[14] While physical inactivity in our study was lower than prisoners[16] and doctors[15] where most were not exercising (71.7% and 75.5% respectively). In study on nurses by Joan M et. Al, regular exercise (for at least 20 to 30 minutes 3 times or more a week) was more than our study i.e 55.6% were doing regular exercise[10]. The physical inactivity in our study was more in our study as compared to study on nurses[10], Cardiologists[18], NHS-2[20] and BRFSS[19] study i.e. (12% vs. 11%,19%,25% respectively).

Smoking causes one fifth of coronary artery disease worldwide. In this study 164(99.4%) were not smokers, this no smoking habit could be attributed to our tradition, that female do not smoke. Smoking was higher in male dominant studies i.e in prisoners[14], journalists[17] and doctors[15] where current smokers were 36 (21.7%), 36% (n=54) and 39 (18.8%)respectively. Our study result is comparable to a study by He Y where, the prevalence of current smoking in the population ≥15 years of age was 66.0% in men and 3.1% in women[21]. The rate of current cigarette smoking was comparable to a study on cardiologists [18] and study on PCNA nurses[10] where smokers were 1.7% and 3.6% respectively. Smoking rate was quiet lower in our study as reported for NHS2[20] (8%) , BRFSS[19] women (18%) and European study of Basel nurses (15%)[22]. The data suggest that Nurses in Peshawar have adopted a positive nonsmoking lifestyle.

CONCLUSION

We noticed that among modifiable risk factors hypercholesterolemia, smoking, diabetes and hypertension were less frequent in nurses while obesity, physical inactivity and sedentary life style were more prevalent.

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CONTRIBUTORS

SBK conceived the idea and planned the study. HUR, JA, MSQ, STS, I, HJ & SFAS did the data collection and analyzed the study. MH & AMG supervised the study. All the authors contributed significantly to the research that resulted in the submitted manuscript.