RISK FACTORS FOR THE DEVELOPMENT OF NON-ST SEGMENT ELEVATION MYOCARDIAL INFARCTION IN WOMEN OF VARIOUS GROUPS

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Abstract

Background*:* There was higher cardiovascular mortality reported, women accounted for 47.3 % of IHD patients.However, data on non ST Elevated Myocardial Infarction (NSTEMI) in females, particularly the risk factors expression in different groups are scarce in our country.

Objectives: This study was conducted to determine the prevalence of risk factors of NSTEMI in females, its occurrence at various groups such as pre and postmenopausal, socioeconomic state rural and urban, various age groups.

Materials and methods: Retrospective cross sectional study data collected from 234 females out of 477 NSTEMI patientsfrom 3 tertiary hospitals in Kabul. medical files of patients attended hospitals from January 1st to December 31st, 2020. For analysis SPSS (version 26, SPSS, Inc., Chicago, IL, USA) was used The significant level considered 0.05;Chi-square (x^2) test for analyze categorical data, and numeric data was analyzed by t test, mean and SD.

Results: The current study looked into most prevalent risk factors36 (75.0%) of premenopausal and 108 (58.1%) postmenopausal patients had hypertension (P=0.032); furthermore, 27 (56.3%) of anemia were premenopausal (P<0.001). physical inactivity was more prevalent75 (56.0 %) in old age (P<0.001).There was a family history in 20 (76.9%) of the young age group(P<0.001).Family history more in good economy patients (P=0.003), Smoking is more prevalent in patients with good socioeconomic status.(P=0.001).DM was in 24 (61.5%) of fair economy patients (P=0.041).Overweight and obesity occurrence is more common in urban78 (50.6 %)(P=0.001), CKD more common in rural 13 (16.3 %)(P<0.001).

Conclusion*:* The most prevalent risk factors were Hypertension and anemia in premenopausal in physical inactivity in old age, and diabetes mellitus in fair socioeconomics, family history of IHD in young age, smoking in people of good socioeconomic, overweight and obesity I urban residents, CKD more prevalent in rural.

Keywords: NSTEMI, Female, Risk factors, Kabul.

Резюме

ФАКТОРЫ РИСКА РАЗВИТИЯ ИНФАРКТА МИОКАРДА БЕЗ ПОДЪЕМА СЕГМЕНТА ST У ЖЕНЩИН РАЗЛИЧНЫХ ГРУПП

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Введение: Сообщалось о более высокой сердечно-сосудистой смертности, составляющей у женщин 47,3% пациентов с ИБС. Однако в нашей стране недостаточно данных об инфаркте миокарда без элевации ST (NSTEMI) у женщин, особенно о проявлении факторов риска в различных группах.

Цель: Это исследование было проведено с целью определения распространенности факторов риска NSTEMI у женщин, его частоте в различных группах, как до- и в постменопаузе, по социально-экономическому состоянию, сельских и городских районов, в различных возрастных группах.

Материалы и методы: Были анализированы данные ретроспективного перекрестного исследования, включающие 234 женщины из 477 пациентов NSTEMI из 3-х больниц в Кабуле, медицинские карты пациентов, посещавших больницы с 1 января по 31 декабря 2020 года. Для анализа SPSS (версия 26, SPSS, Inc., Чикаго, Иллинойс, США) использовался уровень значимости 0,05; критерий Хи-квадрат ($x2$) для анализа категориальных данных, а числовые данные анализировались с помощью t-критерия, среднего и SD.

Результаты: В текущем исследовании изучались наиболее распространенные факторы риска: у 36 (75,0%) пациенток в пре-менопаузе, и у 108 (58,1%) пациенток в постменопаузе была гипертония (Р=0,032); кроме того, у 27 (56,3%) анемия была в пре-менопаузе (Р<0,001). в пожилом возрасте гиподинамия была более распространена у 75 (56,0 %) человек (Р<0,001). У 20 (76,9%) представителей молодой возрастной группы имелся семейный анамнез (Р<0,001). Семейный анамнез чаще у пациентов с хорошим экономическим статусом (Р=0,003), курение чаще встречается у пациентов с хорошим социально-экономическим статусом (Р=0,001). СД был у 24 (61,5%) пациентов с хрошим экономическим статусом (Р=0,041). Избыточный вес и ожирение чаще встречаются у пациентов из города 78 (50,6%) (Р=0,001), ХБП чаще встречается у пациентов из сельских регионов 13 (16,3%) (Р<0,001).

Выводы: Наиболее распространенными факторами риска NSTEMI были гипертония и анемия в пре-менопаузе, гиподинамия в пожилом возрасте и сахарный диабет при благополучной социально-экономической ситуации, семейный анамнез ИБС в молодом возрасте, курение у людей с хорошим социально-экономическим положением, избыточный вес и ожирение у городских жителей, ХБП чаще встречается в сельской местности.

Ключевые слова: NSTEMI, женщина, факторы риска, Кабул.

Түйіндеме

ST СЕГМЕНТІН КӨТЕРМЕСТЕН МИОКАРД ИНФАРКТІСІНІҢ ДАМУ ҚАУІП ФАКТОРЛАРЫ ӘР ТҮРЛІ ТОПТАҒЫ ӘЙЕЛДЕРДЕ

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Кіріспе: Жүрек-қан тамырлары өлімінің жоғарылығы туралы хабарланды, әйелдер ЖИА-мен ауыратын науқастардың 47,3%-ын құрады. Алайда, біздің елімізде әйелдерде (NSTEMI) деңгейінің жоғарылау ынсыз миокард инфарктісі туралы, әсіресе әр түрлі топтардағы қауіп факторларының көрінісі туралы мәліметтер жеткіліксіз.

Мақсаты: бұл зерттеу әйелдерде NSTEMI қауіп факторларының таралуын, оның менопаузадан бұрын және одан кейінгі топтарда кездесуін, ауылдық және қалалық аудандардың әлеуметтік-экономикалық жағдайын, әр түрлі жас топтарын анықтау мақсатында жүргізілді.

Материалдар және әдістері: Кабулдағы 3 үшінші ауруананың NSTEMI 477 пациентінің 234 әйелінен жиналған ретроспективті кросс-зерттеу деректері. 2020 жылдың 1 қаңтарынан 31 желтоқсанына дейін ауруханаларға келген пациенттердің медициналық карталары. SPSS талдау үшін (26 нұсқа, SPSS, Inc., Чикаго, Иллинойс, АҚШ) 0,05 маңыздылық деңгейі қолданылды; категориялық деректерді талдау үшін Хи-квадрат өлшемі (x2), ал сандық деректер t-критерий, орташа және SD арқылы талданды.

Нәтижелер: ағымдағы зерттеуде менопаузаға дейінгі 36 (75,0%) науқаста және постменопаузадан кейінгі 108 (58,1%) науқаста гипертония (Р=0,032) жиі кездесетін қауіп факторлары зерттелді; сонымен қатар, 27 (56,3%) менопауза алдындағы анемия (р<0,001) болды. Егде жаста гиподинамия 75 (56,0 %) адамда жиі кездеседі (р<0,001). Жастоптың 20 (76,9%) өкілінде отбасылық анамнез болды (Р<0,001). Отбасы тарихы жақсы экономикалық жағдайы бар науқастарда жиі кездеседі (Р=0,003), темекі шегу жақсы әлеуметтік-экономикалық жағдайы бар науқастарда жиі кездеседі. (Р=0,001). SD әділ экономикасы бар елдердің 24 (61,5%) пациентінде болды (Р=0,041). Артық салмақ пен семіздік қалалық 78 (50,6%) (Р=0,001), ауылдық жерлерде жиі кездеседі 13 (16,3 %) (р<0,001).

Қорытынды: ең көп таралған қауіп факторлары гипертония және менопаузадағы анемия, егде жастағы физикалық белсенділік және әділ әлеуметтік-экономикалық жағдайдағы қант диабеті, жас кезіндегі ЖЖА отбасылық тарихы, әлеуметтік-экономикалық жағдайы жақсы адамдарда темекі шегу, артық салмақ және семіздік.

Түйінді сөздер: NSTEMI, әйел, қауіп факторлары, Кабул.

Introduction

IHD affects about 126 million individuals (1,655 per 100,000), or 1.72 % of the global population; nine million people have died as a result of the disease. Men were more likely than women to be troubled, and the onset was most typically in the fourth decade [1]. In a current Indian study, 28.45% of ischemic heart disease patients reported premenopausal, while 71.55 % were postmenopausal; the most common risk factors among postmenopausal women included hypertension and dyslipidemia [2]. 24.7 % of patients had STEMI, 32.1 % NSTEMI/UA, and 43.2 % had stable angina; females were more likely to have NSTEMI/UA than other types of IHD, with women suffering from STEMI, NSTEMI/UA, and stable angina in percentages of 21 percent, 31.3 percent, and 24 percent, respectively [3]. According to a recent study in Sri Lanka, 37.7% of patients with acute coronary syndrome had unstable angina, 36.7 percent NSTEMI, and 25.7 percent STEMI; 35.5 percent of overall NSTEMI patients were female, whereas 16.9% of STEMI patients and 43.4 percent of unstable angina patients were female [4] Yet even with this, males and females have approximately simillar rates of NSTEMI [5,6]. According to a study conducted, hypertension was the most common risk factor in 67 percent of female patients, preceded by smoking (52%), hyperlipidemia (35%), and obesity, diabetes, and positive family load (33%, 24%, and 24%, respectively [7].

Heart disease caused for 17.9% of all female deaths in Afghanistan, according to the Afghanistan Mortality Survey 2020 [8]. The Prevalence of coronary artery disease and its risk factors among outpatients in northern Afghanistan in Andkhoy city found that 47.3 % of women had IHD and that hypertension and physical inactivity were the leading risk factors for acute coronary syndromes. However, it did not look into sex-related differences in Ischemic heart disease types, hospital mortality due to NSTEMI, or risk factors in different age groups[9]

In order to determine the prevalence of risk factors of female patients who suffered from NSTEMI; This allows us to determine the prevalence of disease risk factors in in pre- and post-menopausal women, as well as other groups, to identify risk factors and further to evaluate across different groups; This kind of study has never been reported from Kabul Afghanistan. Therefore, the present study entitled – Risk factors for the development of NSTEMI in women of various groups. And undertaken by us. Collaboration is motivated by the identification of the incidence of NSTEMI in females. This study also represents risk factors in many

terms that help us understand and plan for the health and social care systems of that community. And to figure out what has gone unreported in the healthcare system that needs to be solved.

Methodology

Data was acquired from medical files of NSTEMI patients who attended Ibnisina, Jamoriat, and Amiri complex from January 1 to December 31, 2020 in this retrospective cross sectional study. These are the capital's tertiary hospitals, and the bulk of patients come for major medical treatments, especially cardiovascular disorders. According to our findings, out of 477 NSTEMI, 234/477 (49.0%) were female. Cluster sampling was used to choose these individuals.

Patients with ambiguous diagnoses, incomplete reports, or incomplete medical records were excluded from the study.

To compile information, with respect to Afghanistan laws and regulations, and committed to the values mentioned in the Helsinki Declaration, informed consent was acquired from ministry of public health and hospital authorities.

Myocardial necrosis was characterized by NSTEMI as the outcome of myocardial ischemia, which was associated with myocardial infarction and clinical signs and symptoms. One of the conditions listed below must be met in order to make a diagnosis;

1.   In the presence of myocardial ischemia, as well as indicators of it, the levels of cardiac biomarkers (especially troponin) rise or decline.

2.   Symptoms of ischemia;

3.   ECG show new (ST change or new presence of left bundle branch block.);

4.   ECG show pathological Q waves;

5.   On echocardiogram, there is a loss of cardiac contractility and a new beginning of regional wall motion abnormalities[10].

Aim. Our study aimed to assess the prevalence of NSTEMI risk factors in female among different groups, like age, premenopausal and post-menopausal, rural urban.

Research tools

The checklist for Study was used as a tool to identify and determine prevalence of NSTEMI risk factorsin women during 2020. Variables described and diagnosed according to related hospital procedure based on accepted valid guidelines. Patients ages, and diagnosis of some other diseases as risk factors was confirmed as per hospital records. The Checklist included questions about variables on demographics and common risk factors (Table 1).

Table 1.

Prevalence of NSTEMI in female during 2020; A Study From Kabul Afghanistan.

Variable		Total N=234	Premenopausal N=48 (20.5%)	Postmenopausal N=186 (79.5%)	P value
Age mean (SD)		57.55 (14)	38.27 (6.6)	62.53 (12)	<0.001
Address	Rural %	80 (34.2)	12 (25%)	68 (36.6%)	0.132
	Urban %	154 (65.8%)	36 (75.0%)	118 (63.4%)	
Family History %		69 (30.5%)	30 (62.5%)	39 (21%)	<0.001
Hypertension %		144 (61.50%)	36 (75%)	108 (58.1%)	0.032
Systolic BP %		129 (21)	135.94	127.27	0.012
Diastolic BP %		80 (11)	84.27	79.54	0.014
Overweight or Obesity %		100 (42.70%)	20 (41.7%)	80 (43.0%)	0.867
BMI mean (SD)		25.35 (4.74)	24.70 (4.85)	25.52 (4.71)	0.289

COPD %		27 (11.5%)	3 (6.3%)	24 (12.9%)	0.198
Past History %		84 (35.90%)	12 (25%)	72 (38.7%)	0.078
Socioeconomic State	Poor %	189 (80.8%)	39 (81.3%)	150 (80.6%)	
	Fair %	39 (16.7%)	6 (12.5%)	33 (17.7%)	0.147
	Good %	6 (2.6%)	3 (6.3%)	3 (1.6%)	
Smoking %		7 (3.0%)	2 (4.2%)	5 (2.7%)	0.592
Physical Inactivity %		141 (60.30%)	12 (25.0%)	129 (69.4%)	<0.001
Dyslipidemia %		93 (39.70%)	18 (37.5%)	75 (40.3%)	0.722
Anemia %		81 (35.60%)	27 (56.3%)	54 (29.0%)	<0.001
Hb mean (SD)		12.9 (1.73)	12.33 (2.01)	13.06 (1.62)	0.009
Diabetes Mellitus %		102 (43.60%)	21 (43.8%)	81 (43.5%)	0.98
Glucose mean (SD)		119 (63)	118.56 (46)	119.52 (67)	0.926
CKD %		17 (7.30%)	6 (12.5%)	11 (5.9%)	0.117
Creatinine mean (SD)		1.09 (0.75)	1.22 (0.65)	1.07 (0.78)	0.230*

Statistical analysis

Data was extracted from medical records and entered into a computer spread sheet. Prevalence of NSTEMI risk factors was calculated as a percentage of female having defined NSTEMI clinical diagnosis. The analysis of data was performed by the SPSS (version 26, SPSS, Inc., Chicago, IL, USA) software package. The significant level in this study was considered 0.05. The chi-square (x^2) test was used to assess categorical data, and the t test was utilized to evaluate mean and SD of numeric data.

Result

Premenopausal 48 (20.5%) and Postmenopausal 186 (79.5%) women were observed in this study. Their mean ages were 38.27 (6.6) and 62.53 (12) respectively (P<0.001). Hypertensionwas the most frequent risk factor; present in 144 (61.5%) of the patients with a mean of 129 ± 21 (Mean ±SD) systolic pressure and 80 ±12 diastolic pressures. Physical inactivity was its second in 141 (60.3%) and DM was the third with 102 (43.6%) patients. The mean level of fasting blood glucose was 119 ±63. subsequently in order Overweight and obesity in 100 (42.7%) patients; the mean BMI found 25.38 ±4.5, Prior history of IHD had 84 (35.9%), Dyslipidemia and anemia were in 93 (39.7%) and 81 (34.6%) patients. The mean hemoglobin level in all of these patients was 12.9± 1.7 Family history of Ischemic heart diseases and Chronic kidney diseases were 69 (29.5%) and 17 (7.3%). The mean creatinine level reported 1.09 ±0.74 (Mean ±SD). About 7 (3%) of the patients said they were smokers (Table 2)

Table 2.

Structure of risk factors of myocardial infarction without ST segment elevationin in female during 2020 year from Kabul Afghanistan.

Risk Factors	Age Groups						P value
	Young Age		Middle age		Old Age		
	Frequency	%	Frequency	%	Frequency	%	
Hypertension	20	76.9%	82	61.2%	42	56.8%	0.190
Physical Inactivity	4	15.4%	75	56.0%	62	83.8%	<0.001
Diabetes Mellitus	13	50.0%	50	37.3%	39	52.7%	0.079
overweight or Obesity	6	23.1%	67	50.0%	27	36.5%	.017*
Past History	7	26.9%	47	35.1%	30	40.5%	0.440
Dyslipidemia	8	30.8%	59	44.0%	26	35.1%	0.278
Anemia	13	50.0%	41	30.6%	27	36.5%	0.150
Family History	20	76.9%	41	30.6%	8	10.8%	<0.001
COPD	0	0.0%	16	11.9%	11	14.9%	0.122
CRF	3	11.5%	10	7.5%	4	5.4%	0.579
Smoking	1	3.8%	5	3.7%	1	1.4%	0.605

Family history as a risk factor was present in 63 (33.3%) poor, 3 (7.7%) in fair and 3 (50.0%) in good socioeconomic patients. Which that this risk factor more prevalent in good economy patients (P=0.003)

When risk factors were compared, we discovered that 36 (75.0%) of premenopausal patients and 108 (58.1%) postmenopausal patients had hypertension (P=0.032); furthermore, 27 (56.3%) and 54 (29.0%) had Anemia, anemia more in premenopausal (P<0.001).

In the young age group, 4 (15.4 %); the middle age group, 75 (56.0 %); and in the old age group, 62 (83.8 %) patients were physically inactive. Physical inactivity was more prevalent in old age (P<0.001).There was a family history in 20 (76.9%) of the middle age group, 41 (30.6%) of the middle age, and 8 (10.8%) of the old age groups. Family history of IHD more prevalent in young age patients (P<0.001).

Our study observed that poor patients were 2 (1.1%), fair 4 (10.3% and good economy patients 1 (16.7%) Smoking. It explored that this risk factor is more prevalent in patients with good socioeconomic status (P=0.001).

Aspect of DM we revealed that poor patients were 75 (39,7%), fair 24 (61,5% and good economy patients 3 (50.0%) diabetic. It explored that this risk factor is more prevalent in patients with fair socioeconomic status (P=0.041).

Risk factors for myocardial infarction without st segment elevation women in different socio-economic groups from Kabul Afghanistan.

Risk factors	Socioeconomic State N=234						P value
	Poor		Fair		Good		
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Hypertension	114	60.3%	24	61.5%	6	100.0%	0.144
Physical Inactivity	111	58.7%	24	61.5%	6	100.0%	0.124
Diabetes Mellitus	75	39.7%	24	61.5%	3	50.0%	0.041
Overweight or Obesity	79	41.8%	18	46.2%	3	50.0%	0.826
Past History	72	38.1%	9	23.1%	3	50.0%	0.157
Dyslipidemia	72	38.1%	18	46.2%	3	50.0%	0.564
Anemia	69	36.5%	9	23.1%	3	50.0%	0.200
Family History	63	33.3%	3	7.7%	3	50.0%	0.003
COPD	18	9.5%	9	23.1%	0	0.0%	0.036
CKD	16	8.5%	1	2.6%	0	0.0%	0.341
Smoking	2	1.1%	4	10.3%	1	16.7%	0.001

Overweight and obesity occurrence in rural and urban patients were 22 (27.5) and 78 (50.6 %), respectively which show Overweight and obesity higher in urban patients (P=0.001), and CKD rates were 13 (16.3 %) and 4 %, respectively (2.6 %). Which show that CKD was higher in rural patients (P<0.001).
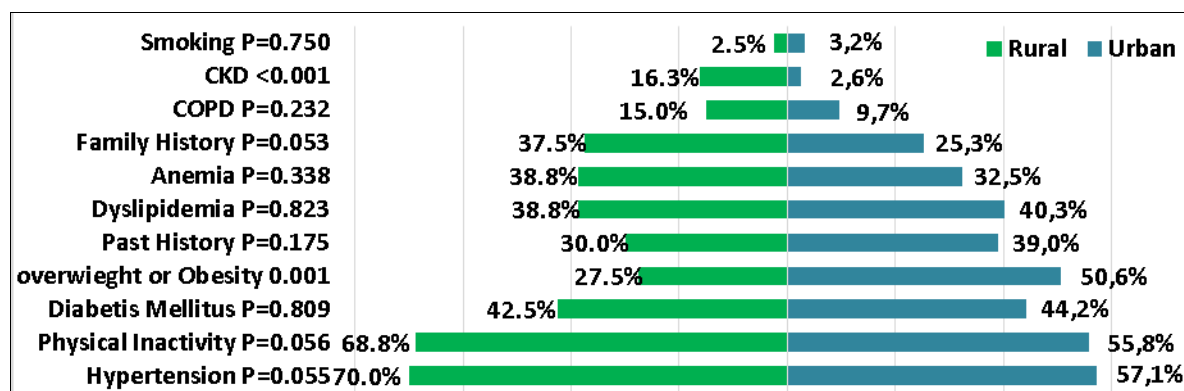

Figure 1 Risk factor difference between rural and urban residents.

Discussion

Premenopausal women were more likely than postmenopausal women to have hypertension, a family history of IHD, and anemia. 75 percent vs. 58.10 percent, 63 percent vs. 21 percent, and 56 percent vs. 29 percent were the percentages, respectively.

Hypertension is the most common risk factor, affecting 61.5 % of women. Several investigations came up with similar findings.[5,7], This percentage, however, was lower than in others research[6,11].In research undertaken in Germany and the United States, this trend has been much more prevalent. [12,13].The second factor was revealed to be physical inactivity, which is more likely to affect rural residents. In the Sri Lankan study, this risk factor was less prominent than in ours[14].According to our findings, Diabetes affected 43.6 percent of individuals. This rate of occurrence was higher than that found in several research[6,7,11–13,15]. Our DM findings were lower than those of a study included in the review[5,13,16,17].By comparing obesity and BMI to a study, a similar result was achieved[5,18].Our smoking findings were nearly identical to those of Indian researchers[5,19];We accounted for half of the findings of the Polish study by smoking[13].However, only about a tenth of the research carried in Bosnia and Herzegovina and Sweden was reported[7,11].The significant inequalities in data reflect Afghan society's customs and traditions. Women are less likely to smoke and are discouraged from doing so in public places.

Premenopausal women had greater blood pressure, although diabetes was the same in both groups. [20].Premenopausal and postmenopausal women suffered from dyslipidemia and obesity in similar ways. However, it was discovered in a study that it was more common among postmenopausal women. [20].

Conclusion:

We discovered that premenopausal patients had a higher prevalence of hypertension as a risk factor (P=0.032); furthermore, Anemia were also more common in premenopausal (P<0.001).

Physical inactivity was more prevalent in old age (P<0.001), Family history of IHD in young age patients (P<0.001). Family history risk factor more frequent in good economy patients (P=0.003), Smoking has been investigated as a risk factor that is higher in patients with a good socioeconomic status (P=0.001). Patients with a moderate socioeconomic background are more likely to develop diabetes(P=0.041).

Patients in uban areas are more likely to be overweight or obese. (P=0.001), Rural patients had a greater rate of CKD. (P<0.001).

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