International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 14, No. 2, February 2025 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_14.2.2025.174

ORIGINAL RESEARCH

Study of demographic profile of patients seeking assessment of lipid panel markers in a tertiary care rural hospital

[1]Dr. Prashant Sitaram Chandankhede,[2]Dr. Sunil Arvind Chakole, [3]Dr.Gaurav Gohad, [4]Dr. Ankita Raut

[1]Associate Professor, Biochemistry, DRGMC, Amravati, Maharashtra, India
[2]Assistant Professor, Biochemistry, DRGMC, Amravati, Maharashtra, India
[3]Associate Professor, Pathology, DRGMC, Amravati, Maharashtra, India
[4]Assistant Professor, Optholmology, DRGMC, Amravati, Maharashtra, India

Corresponding Author
Dr. Prashant Sitaram Chandankhede
Associate Professor, Biochemistry, DRGMC, Amravati, Maharashtra, India
Email: prashantchandankhede96@gmail.com

Received: 24Dec, 2024 Accepted: 25Jan, 2025

ABSTRACT

Background: Derangements of lipoprotein metabolism are a risk factor for several conditions apart from the most commonly associated cardio-metabolic disorders [1,2]. It has been demonstrated that high levels lipid panel markers of serum namely total cholesterol (TC), triglycerides (TG), LDL cholesterol, very-low-density lipoprotein (VLDL), low concentration of HDL cholesterol, along with increased body mass index (BMI) are significantly implicated in CHD [3].**Aim:** Study of demographic profile of patients seeking assessment of lipid panel markers in a tertiary care rural hospital. **Materials and Methods:** Hospital based secondary data analysis from clinical records of IPD patients for whom lipid panel investigation was carried out during the period 2017 to 2018. A sample size of 300 was considered using prevalence of hypertension in the catchment area. The dataset of 300 patients was retrieved from HIS. The Analysis was done using Epi Info software.**Result:** Out of 300 patients studied 168 were males and 82 were females among positive results & 26 were males & 24 were females among negative result. Out of 300 patients studied distribution of positive & negative cases were displayed in the following table according to their age based category for each decade of life from 10 years to 90 years. Out of 300 patients included in the study as per record 150 patients. Were having prior history of relevant diseases in relation to cardio-metabolic disorder like hypertension, diabetes mellitus and ischemic heart disease or other cardiovascular diseases.**Conclusion:**These results provide a very important revelation about alarming socioeconomic problem which needs special attention with utmost urgency. It also revealed that past history of hypertension to have an important association with dyslipidaemia.

Key words: Lipid panel markers, cardiometabolic disorders, dyslipidaemia, demographic profile, hypertension

INTRODUCTION

Derangements of lipoprotein metabolism are a risk factor for several conditions apart from the most commonly associated cardio-metabolic disorders[1,2]. It has been demonstrated that high levels lipid panel markers of serum namely total cholesterol (TC), triglycerides (TG), LDL cholesterol, very-low-density lipoprotein (VLDL), low concentration of HDL cholesterol, along with increased body mass index (BMI) are significantly implicated in CHD [3].

European Society of Cardiology has stressed upon various factors for individual risk scoring which included various demographic parameters including age, sex, obesity, addiction, relevant history of hypertension and other metabolic conditions particularly including the lipid derangement [4].There are various inconsistencies in defining Dyslipidaemia; however globally accepted guidelines as per NCEP ATPIII recommendations mentioned the cut-off value for each of the lipid panel markers: TC below 200 mg/dl, LDL cholesterol below 100 mg/dl, HDL cholesterol above 40 mg/dl and for TG the desired value is set at 150 mg/dl or below for the general populace [5].

Persons with increased blood cholesterol levels have been shown to have higher prevalence of hypertension, and also higher prevalence of hypercholesterolemia has been recorded in many hypertensive subjects indicating an important clinico-epidemiological link between these factors. Moreover,

DOI: 10.69605/ijlbpr_14.2.2025.174

patients with both of these two conditions found to have three times higher prevalence of MI [6]. Previous study has reported the role of hypertension as a risk factor in metabolic syndrome in Indian context has been shown [7]. Smoking and alcoholism are two significant independent risk factors of CVD and quite remarkably both of these addictions are also shown to have effect on lipid panel parameters [8, 9]. With this background the present study has been designed to find out association of dyslipidaemia and hypertension.

MATERIALS AND METHODS

STUDY DESIGN: Hospital based secondary data analysis from clinical records of IPD patients for whom lipid panel investigation was carried out. Taking the advantage of the Lab information system (LIS) database which is an integral part of Hospital information system (HIS) all the relevant data was retrieved from HIS for whom lipid panel investigation was performed.

STUDY PERIOD: 2017 to 2018.

SAMPLE SIZE: Considering the prevalence of hypertension in the catchment area of the hospital a sample size of 300 cases was considered to be included in the study with the investigation report of all the markers of lipid panel.

METHODS: After taking due permission from the hospital authority and following ethical norms of maintenance of the confidentiality of the data without any disclosure of personal identity of any subjects involved in the study, the dataset of 300 patients was retrieved from HIS and maintained in the departmental computer database for further analysis.
Analysis of case records of patients having lipid profile investigation report was checked for entry into datasheet by categorization in terms of basic demographic and clinical history. Data has been represented in tabular and graphical format.

STATISTICAL ANALYSIS: Data was stored in Microsoft Excel sheet and analysed using Epi info software. Frequency and percentage have been presented for categorical variables and Chi-square test was used to check the association between dyslipidaemia and hypertension.

RESULT

A cohort of 300 patients was selected for whom lipid profile investigation was carried out based on the available data from hospital information system of a tertiary care rural hospital set-up in central India.
For understanding the clinico-epidemiological correlates of altered lipid markers a descriptive statistical method was adapted for finding the distribution of various basic epidemiological and clinical factors in the population with or without dyslipidemia.

1. SEX-WISE DISTRIBUTION OF STUDY POPULATION WITH POSITIVE OR NEGATIVE TEST RESULTS

Out of 300 patients studied 168 were males and 82 were females among positive results & 26 were males & 24 were females among negative result.

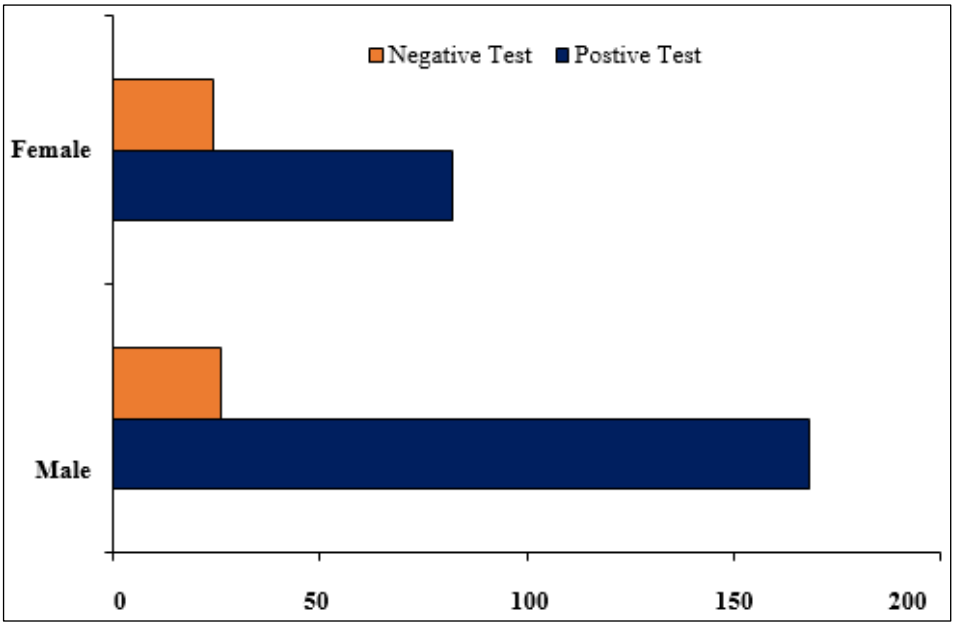

Fig 1: Sex wise distribution of study population with positive and negativetest results

2. AGE WISE DISTRIBUTION OF THE STUDY POPULATION

Out of 300 patients studied distribution of positive & negative cases were displayed in the following table according to their age based category for each decade of life from 10 years to 90 years.

DOI: 10.69605/ijlbpr_14.2.2025.174

Table 1: Age wise distribution of population with either positive or negative test results

Age	Positive cases	Negative Cases
10-20 yrs	2	0
21-30 yrs	6	1
31-40 yrs	25	3
41-50 yrs	51	10
51-60 yrs	72	9
61-70 yrs	55	18
71-80 yrs	28	10
81-90 yrs	10	0

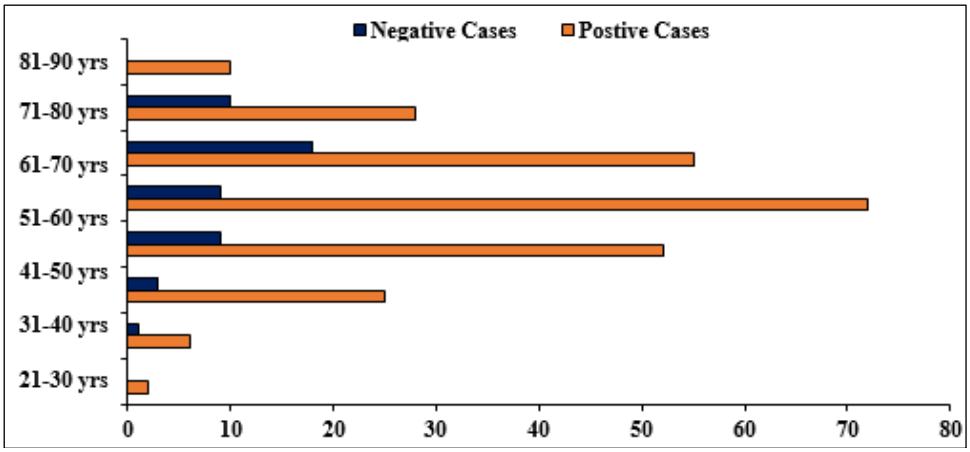

Fig 2: Distribution of positive or negative cases of dyslipidemia in the population in various age-wise groups

Further sex wise distribution of the population in these decade wise age groups was shown in the following figure and table 2 shown below.

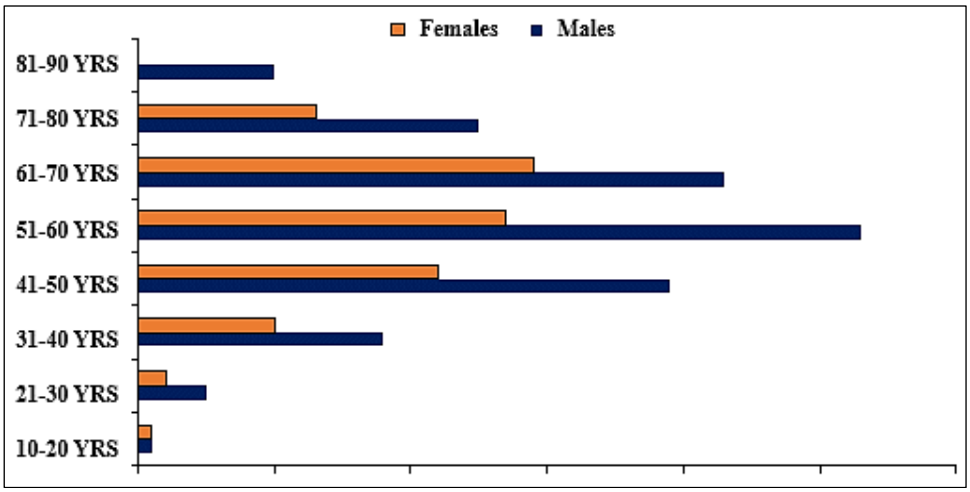

Fig 3: Distribution of males and females of the population in age-wise groups

Table 2: Age group wise distribution of population in either male or female categories

Age	Males	Females
10-20 YRS	1	1
21-30 YRS	5	2
31-40 YRS	18	10
41-50 YRS	39	22
51-60 YRS	53	28
61-70 YRS	44	29
71-80 YRS	25	13
81-90 YRS	10	0

DOI: 10.69605/ijlbpr_14.2.2025.174

3. DISTRIBUTION OF STUDY POPULATION ACCORDING TO PAST RELEVANT HISTORY

Out of 300 patients included in the study as per record 150 patients were having prior history of relevant diseases in relation to cardio-metabolic disorder like hypertension, diabetes mellitus and ischemic heart disease or other cardiovascular diseases.

Among them 124 patients showed positive test and 26 were having negative test. Also, equal number of patients with no such relevant histories suggestive of dyslipidemia was found; among these 150 patients 127 were having positive test and remaining 23 were found with negative test.

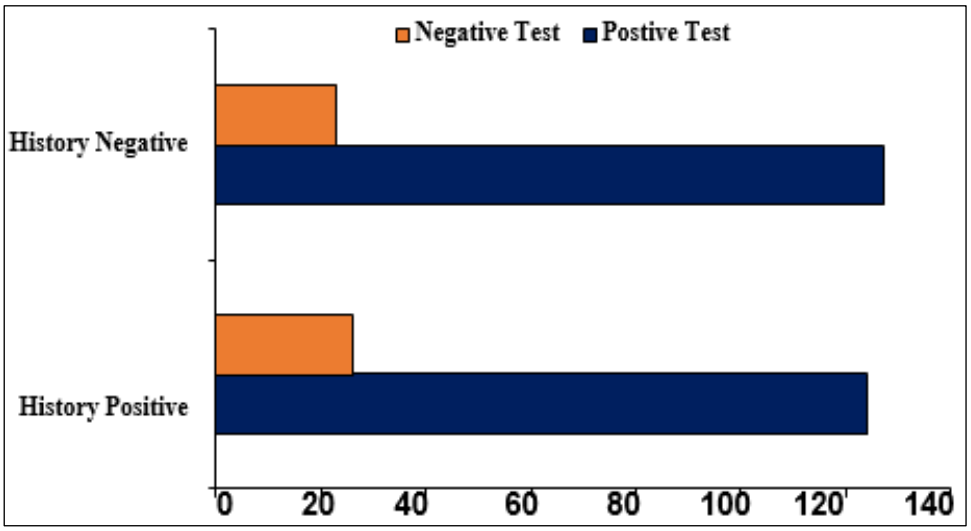

Fig 3: Distribution of study population according to history with positive or negative test results

Further gender specific sub-categorization was done for these positive or negative cases with or without previous history of diseases. Which is shown below:

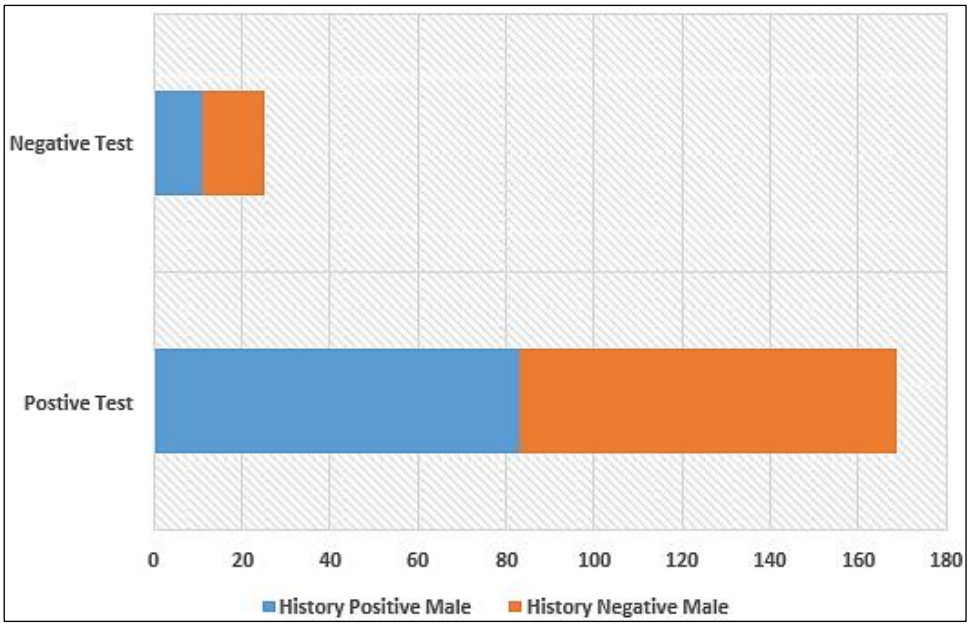

Fig4: Distribution of study population with or without history of disease with positive or negative test results among male population

DOI: 10.69605/ijlbpr_14.2.2025.174

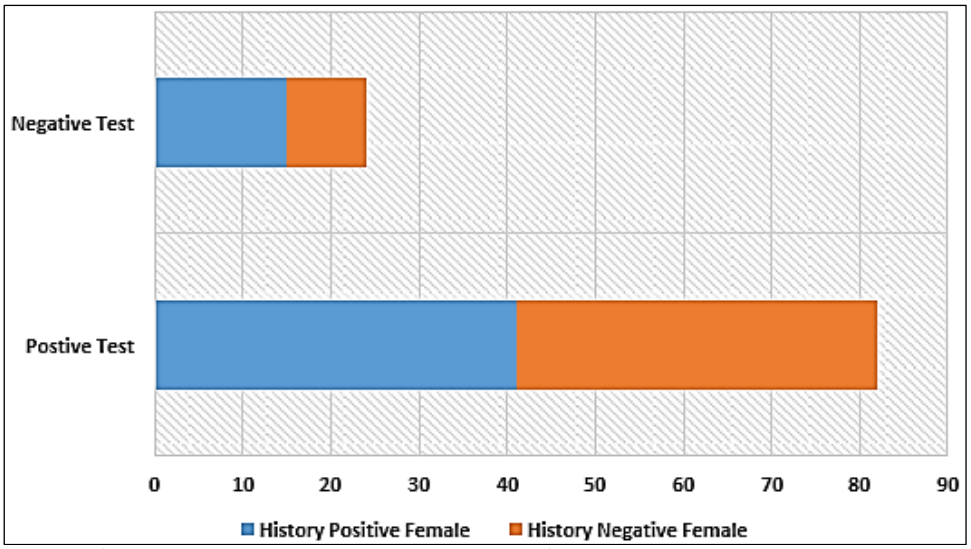

Fig 5: Distribution of study population with or without history of disease with positive or negative test results among female population

4. DISTRIBUTION AMONG SMOKING & ALCOHOLIC COMBINATION

Out of 300 patients studied 2 patients were found to have smoking & alcohol consumption habits. Both of them were positive for one or more lipid panel markers.

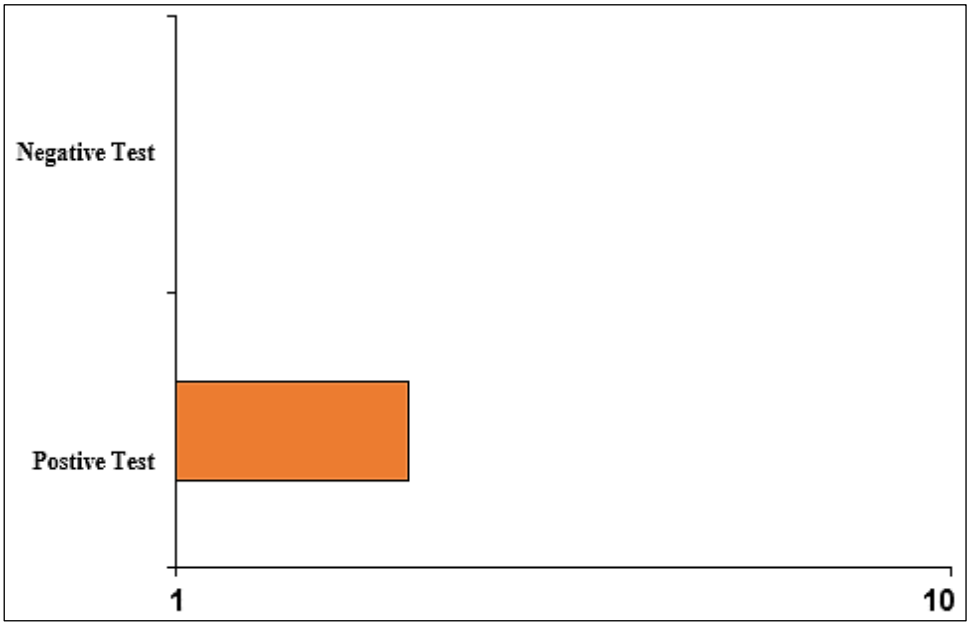

Fig 6: Distribution of positive or negative results among smoking &alcoholics

DISCUSSION

The major objective was to assess the distribution of common epidemiological variables like age, gender in this dataset and further linking these investigation results to the available history of significant addictions, past relevant health conditions that is known to contribute to the risk of development of cardiovascular disease.

The demographic pattern study indicates that overall total of 194 males haveoutnumbered the aggregate of 96 females in the cohort of the patients advised for lipid panel investigation. However, one has to rule out possible confounding effect of gender bias in reaching out for seeking health care facility; this might be more relevant particularly in rural setup with apparent skew towards male predominance for various socioeconomicreasons.

Out of this figures nearly 87% of males were having positive test results and for the females around 85% were found to have positive results. This result showsalmost similar representation of positive cases among both males and females.

In this study, the account of age specific distribution highlights the impact of this metabolic pathology mostly affected the adult populace (40-70 years), because the percentage more than 70% all positive cases of the total population in the lipid profile investigation cohort was found to be in this combined

DOI: 10.69605/ijlbpr_14.2.2025.174

age group with highest percentage of around 90% of the age specific positive cases was recorded in the sixth decade of life (50-60 years) followed by around 85% of such age specific positive cases in fifth decade of life.

The possible explanation might be obvious involvement of this people in active earning phase of life facing the maximum brunt of the stress which is further accentuated in the later phase of adulthood as a direct proportionate effect on cardio-metabolic impact in relation to advance in age. This is supported by the fact that all the major risk criteria are formulated with age as an important determinant.

Similar trend of higher proportion of positive cases were found in the higher age groups as well. In persons those who were in their 9th decade of life, although their number was actually very few, however all these cases showed positive or altered test results for the lipid panel markers.

The reason behind this observation might be that people with very old age are always not in a position to attend the hospital for their health care, particularly in the rural set-up. However, those patients did turn up they are always the definite cases and thus 100% of this population showed positive results.

History of previous significant disease conditions like hypertension and diabetes mellitus with proven pathogenic contribution to the cardio-metabolicdisorder were analysed. Out of total 300 cases, exactly 50% cases were reported to have history of suggestive disease like hypertension, diabetes mellitus and certain cardiovascular pathology.

This result shows that a considerable number of cases who were advised for lipid profile investigation had earlier history of related disease. It reflects that pre-test probability of disease in clinical setting is largely governed by the previous records and also the majority of them were found to be having actual dyslipidemia.

Population distributions with history of addiction of smoking and/oralcoholism were considered due to their established connection with cardio- metabolic pathophysiology. The result showed that there is marked imprint of such addiction habits on the lipid profile, as reflected by the fact that most people with addiction were shown to have abnormal lipid profile.

All the smokers and seventy percent of alcoholics were found to have altered lipid profile. Only two persons with both addictions were noted and they were having dyslipidemia. Although number of total addicted people was very low, however the evidence shows that addiction history has definitive impact on lipid metabolic disorder.

In this context it is important to consider that elicitation of proper history of addiction may be difficult owing to various social obligations. A study on general populace with or without specific addiction may be carried out to find dyslipidemic persons in each group to draw better conclusion in this regard.

CONCLUSION

This study indicated that most frequently affected population in terms of altered lipid metabolism belongs to the age group of 40-70 years. Moreoverwith the observation of almost similar proportion of dyslipidemic cases across the gender probably indicate the changing socioeconomic role of female with possible increased cardio-metabolic stress comparable to that in males.

These results provide a very important revelation about alarming socioeconomic problem which needs special attention with utmost urgency. Italso revealed that past history of hypertension to have an important associationwith dyslipidaemia.

In essence, this study explored the possibility of extending the scope of the lab medicine to integrate it with various clinical and demographic determinants.

References

1. Ramachandran A, Snehalatha C. Rising Burden of Obesity in Asia. J Obes. 2010; 2010:1-8.
2. Nanditha A, Ronald M, Ambady Ramachandran A, Snehalatha C, JulianaC. *et al*. Diabetes in Asia and the Pacific: Implications for the Global Epidemic. Diabetes Care 2016; 39(3): 472-485.
3. Pan WH, Wen-Ting Yeh W, Weng LC. Epidemiology of metabolic syndrome in Asia. Asia Pac J Clin Nutr. 2008;17(S1):37-42.
4. Piepoli MF, Hoes AW, Agewall S, Albus C, Brotons C. *et al*. 2016 European Guidelines on cardiovascular disease prevention in clinical practice: The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and byinvited experts) Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR). European Heart Journal. 2016; 37 (29): 2315–2381.
5. Agnoli C, Berrino F, Abagnato CA, Muti P, Panico S, Crosignani P, *et al*.Metabolic syndrome and postmenopausal breast cancer in the ORDET cohort: a nested case-control study. Nutr. Metab. Cardiovasc Dis 2010;20(1): 41.
6. Laguardia HA, Hamm LL, Chen J. The metabolic syndrome and risk of chronic kidney disease: pathophysiology and intervention strategies. J Nutr Metab. 2012; 2012: 1-9.