DIYSLIPIDEMIA AMONG THE ELDERLY IN SLUMS OF WEST DELHI

ZAOZIANLUNGLIU GONMEI1,2, SUPRIYA DWIVEDI1,2, GURUDAYAL SINGH TOTEJA1,4*, KARUNA SINGH2, NAVAL KISHORE VIKRAM5, PRIYANKA GUPTA BANSAL1, SUMAN RATHORE2

1Division of Nutrition, Centre for Promotion of Nutrition Research & Training with special focus on North East, Tribal & Inaccessible population (Indian Council of Medical Research), New Delhi, India. 2Department of Food & Nutrition, Amity Institute of Food Technology, Amity University Uttar Pradesh, Noida, Uttar Pradesh, India. 3Department of Biotechnology, Amity Institute of Biotechnology, Amity University Uttar Pradesh, Noida, Uttar Pradesh, India. 4Desert Medicine Research Centre (Indian Council of Medical Research), Jodhpur, Rajasthan, India. 5Department of Medicine, All India Institute of Medical Sciences, New Delhi, India. Email: gstoteja@gmail.com

ABSTRACT

Objective: The objective of this study is to assess the prevalence of dyslipidemia among the elderly in slums of West Delhi.

Methods: A cross-sectional study was carried out in slums of West Delhi covering a total of 234 elderly aged 60 and above. 5 ml blood was collected from 103 elderly and was analyzed for serum total cholesterol, triglyceride, high-density lipoprotein (HDL) cholesterol, and low-density lipoprotein (LDL) cholesterol by enzymatic method using fully automatic analyzer (Roche Hitachi-902). Dyslipidemia was defined using the National Cholesterol Education Program, ATP-III guidelines.

Results: The overall prevalence of high cholesterol (≥200 mg/dl), high triglyceride (≥150 mg/dl), low HDL cholesterol (male - <40 mg/dl; female - <50 mg/dl), and high LDL cholesterol (≥130 mg/dl) was 20.39%, 45.63%, 64.08%, and 17.31%, respectively.

Conclusion: Low HDL cholesterol and high triglyceride were the most form of dyslipidemia among the elderly. Awareness on dietary and lifestyle modification for management of dyslipidemia needs to be imparted.

Keywords: Elderly, Dyslipidemia

INTRODUCTION

Cardiovascular disease (CVD) is one of the five global leading causes of total years of life lost in 2016 [1]. Dyslipidemia is a well-established risk factor of CVD amounting to more than half of the global cases of coronary artery disease [2,3]. Its prevalence has increased over a period of 20 years among the urban population in India [4]. Rapid urbanization, rural-to-urban migration, poor dietary habits, physical inactivity, sociocultural factors, and genetic predisposition all contribute to dyslipidemia [5]. The WHO Study on Global Aging and Adult Health carried out among 39,436 adults during 2007-2010 revealed that rural-urban migrants had a similar risk factor profile for non-communicable disease to the urban group, suggesting that exposure to urban environments may promote assimilation of health behavior regardless of previous life experiences [6]. This study was carried out to assess the prevalence of dyslipidemia among the elderly in slums of West Delhi.

METHODS

A cross-sectional study was carried out in slums of West Delhi. A total of 234 elderly aged 60 and above were enrolled in the study with the help of local community leaders and paramedicals working in the area. 5 ml blood was drawn from 103 elderly and was analyzed for serum total cholesterol, triglyceride, high-density lipoprotein (HDL) cholesterol, and low-density lipoprotein (LDL) cholesterol by enzymatic method using fully automatic analyzer (Roche Hitachi-902). The biochemical analysis was done at the National Accreditation Board for Testing and Calibration Laboratories Accredited Laboratory, Centre for Promotion of Nutrition Research and Training, with a special focus on North-East, Tribal and Inaccessible Population (Indian Council of Medical Research), New Delhi. Internal and external quality control of analysis was maintained. The institutional ethical clearance was obtained. A written informed consent was taken from all the study volunteers.

Dyslipidemia was defined using the National Cholesterol Education Program, ATP-III guidelines [7].

RESULTS

The overall mean of serum total cholesterol, triglyceride, HDL cholesterol, and LDL cholesterol is 68.86 mg/dl, 162.5 mg/dl, 43.89 mg/dl, and 10.56 mg/dl, respectively (Table 1). The mean level of all parameters was higher in female as compared to males.

The overall prevalence of high cholesterol (≥200 mg/dl), high triglyceride (≥150 mg/dl), low HDL cholesterol (male - <40 mg/dl; female - <50 mg/dl), and high LDL cholesterol (≥130 mg/dl) respectively was 20.39%, 45.63%, 64.08%, and 17.31% (Table 2). Prevalence of dyslipidemia was higher in females compared to male elderly.

DISCUSSION

Our study indicated overall prevalence of high cholesterol (≥200 mg/dl), high triglyceride (≥150 mg/dl), low HDL cholesterol (male - <40 mg/dl; female - <50 mg/dl), and high LDL cholesterol (≥130 mg/dl) respectively was 20.39%, 45.63%, 64.08%, and 17.31% (8). Another study carried out among rural elderly in China reported the similar prevalence of high cholesterol (18.13%), while prevalence of high triglyceride (12.21%), low HDL cholesterol (32.76%), and high LDL cholesterol (13.23%) was lower compared to our findings [9]. Asian Indians have an abnormal fat distribution which makes it more prone to dyslipidemia [10].

Low HDL cholesterol was the most common among the elderly in our study. The Indian Council of Medical Research-India Diabetes
The concentration of cholesterol increases until 45–55 years of age in men, while for women, it continues increasing and only declines in the last decade of life [13]. A cross-sectional study carried out among 5375 adults in China also revealed peak prevalence of dyslipidemia in men between 30 and 39 years with a gradual decline as age increases, while in women, the prevalence of dyslipidemia increased with age and peak prevalence occurs after the age of 60 [14]. Menopause leads to changes in hormonal status and lipid profile in women by resulting in increased total and LDL cholesterol and reduced HDL cholesterol [15]. Our study also revealed a higher prevalence of dyslipidemia among elderly female compared to male. A study carried out among 40% of men and 28% of women had triglycerides ≥150 mg/dl and about 74% of men and 82% of women had low HDL cholesterol <40/50 mg/dl [12].

CONCLUSION
Low HDL cholesterol and high triglyceride were the most form of dyslipidemia among the elderly. Awareness on dietary and lifestyle modification for management of dyslipidemia needs to be imparted.

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AUTHORS CONTRIBUTIONS
- *Zaozianlungliu Gonmei: Data collection, data analysis, interpretation of data, and paper writing
- *Supriya Dwivedi: Data collection, data analysis, interpretation of data, and paper writing
- Dr. Gurudayal Singh Toteja: Conceptualization of study, interpretation of data, and finalization of manuscript
- Dr. Karuna Singh: Conceptualization of study and interpretation of data

*Equal contribution

REFERENCES

Table 1: Mean±SD and median serum levels of total cholesterol, triglyceride, HDL cholesterol, and LDL cholesterol of elderly

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<th>Parameters</th>
<th>N</th>
<th>All Mean</th>
<th>All Median</th>
<th>N</th>
<th>Male Mean</th>
<th>Male Median</th>
<th>N</th>
<th>Female Mean</th>
<th>Female Median</th>
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<tbody>
<tr>
<td>Total cholesterol (mg/dl)</td>
<td>103</td>
<td>68.86</td>
<td>171</td>
<td>56</td>
<td>162.11</td>
<td>163.74</td>
<td>47</td>
<td>176.89</td>
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<td>Triglyceride (mg/dl)</td>
<td>103</td>
<td>162.5</td>
<td>143.0</td>
<td>56</td>
<td>144.81</td>
<td>116.15</td>
<td>47</td>
<td>183.70</td>
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<tr>
<td>HDL (mg/dl)</td>
<td>103</td>
<td>43.89</td>
<td>39.51</td>
<td>56</td>
<td>41.9</td>
<td>41.1</td>
<td>47</td>
<td>46.23</td>
<td>38.15</td>
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<tr>
<td>LDL (mg/dl)</td>
<td>52</td>
<td>105.60</td>
<td>109.00</td>
<td>21</td>
<td>96.05</td>
<td>98.00</td>
<td>31</td>
<td>112.06</td>
<td>113.00</td>
</tr>
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</table>

HDL: High-density lipoprotein, LDL: Low-density lipoprotein

Table 2: Prevalence of dyslipidemia in the elderly

<table>
<thead>
<tr>
<th>Parameters</th>
<th>N</th>
<th>All (%)</th>
<th>N</th>
<th>Male (%)</th>
<th>N</th>
<th>Female (%)</th>
</tr>
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<tbody>
<tr>
<td>Total cholesterol (≥200 mg/dl)</td>
<td>103</td>
<td>21 (20.39)</td>
<td>56</td>
<td>9 (16.07)</td>
<td>47</td>
<td>12 (25.53)</td>
</tr>
<tr>
<td>Triglycerides (≥150 mg/dl)</td>
<td>103</td>
<td>47 (45.63)</td>
<td>56</td>
<td>19 (33.93)</td>
<td>47</td>
<td>28 (59.57)</td>
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<td>HDL-cholesterol (M - &lt;40 mg/dl; F - &lt;50 mg/dl)</td>
<td>103</td>
<td>66 (64.08)</td>
<td>56</td>
<td>27 (48.21)</td>
<td>47</td>
<td>39 (82.98)</td>
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<tr>
<td>LDL-cholesterol (≥130 mg/dl)</td>
<td>52</td>
<td>9 (17.31)</td>
<td>21</td>
<td>2 (9.52)</td>
<td>31</td>
<td>7 (22.58)</td>
</tr>
</tbody>
</table>

HDL: High-density lipoprotein, LDL: Low-density lipoprotein

The authors declare that there are no conflicts of interest.