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Age and General Characteristic Effect on Iraqi Patients with Type 2 Diabetes Mellitus

Saba Hamid¹, Hayder B Sahib²
¹Clinical pharmacy Department/ College of pharmacy/Al-Nahrain University/Baghdad- Iraq
²Pharmacology Department/ College of pharmacy/ Al-Nahrain University/ Baghdad- Iraq
H.P:009647812353838, E. Mail : haider_bahaa@yahoo.com

Abstract. The study aimed to investigate the cardiovascular risk factors in Iraqi diabetic patients. Two hundred and ninety nine randomly recruited type 2 diabetic attending the National Diabetes Center/ Al-mustansiriya University for the period (October to December). They were categorised in regard to age, duration of diabetes, smoking, socioeconomic status, anthropometric indices, blood pressure, fasting plasma glucose, glycated hemoglobin A1c, serum lipids and medication used during this period. Duration of diabetes, diastolic blood pressure, glycated hemoglobin A1c, fasting plasma glucose, serum lipids, number of hypercholesterolemic patients, the number of patients having unfavorable total cholesterol/high density lipoprotein HDL ratio (≥5) were all significantly higher in the older diabetics. younger diabetic males were distinguished by a larger number of hypertensive patients, higher level of systolic blood pressure, higher means of body mass index, total cholesterol and low density lipoprotein LDL, and larger number of patients having low HDL-C (<1 mmol/L). The older diabetic males were distinct by a large number of smokers, number of smoked cigarettes/day, Smoking index (PYI) and longer duration of smoking. All parameters ranged between p<0.05 and p<0.005. the data showed that cardiovascular risk factors were significantly higher among older type 2 diabetics (>60 years), particularly females.

Keywords: Type 2 diabetes, HbA1c%, Fasting plasma glucose, Lipid profile, Smoking, Cardiovascular risk factors, Dyslipidemia

1. Introduction
Diabetes mellitus (DM) is a world-wide metabolic disorder which is the major disease in both developing and developed nations [1]. Its consider the highly prevalent once in the Middle Eastern countries, and one adult for each 10 persons will have this disease estimation by 2035, that justified for 382 million people around the world (8.3% of adults) with DM [2, 3]. The main factors that have a Major contributing effect on this disease include low activity levels, excess body weight, poor diet, Lack of health awareness, attitudes, and health beliefs [2]. DM has Long-term complications include microvascular and macrovascular diseases [4]. Unhealthy lifestyle changes may lead to metabolic syndrome, type 2 diabetes mellitus, coronary arterial diseases and other changes are the final result of a field study by the World Health Organization (WHO), World Bank and Harvard University in 1990 [5]. DM prevalence in the United States was estimated to be In persons >60 years old, was 20.9% and 0.22% for people <20 years of age and 9.6% in those >20 years of age [6]. The susceptibility or accelerate comorbidities of DM, may increase by the aging process and the clinical progression of DM.
within gender comparisons between the two age groups (<60 years old and ≥60 years).

Glycated hemoglobin (HbA1c) is not only a good marker for long-term glycemic control, but also has a great effect in reducing the risk of cardiovascular disease (CVD) [8, 11, 12]. Dyslipidemia has a great role in the pathogenesis of DM2, since insulin resistance or deficiency has an effect on the pathways and key enzymes used in lipid metabolism [9, 10]. Diabetic dyslipidemia characterized by a high triglyceride concentration, decreased HDL-c and elevation of small, dense LDL particles [13, 14]. In diabetes the progression of atherosclerosis highly accelerates by hyperglycemia, obesity and insulin changes [15, 16]. The aging process has shown a strong relation between type 2 diabetes mellitus (T2DM) and cardiovascular diseases [17], and there is a greater relative risk in women than in men with coronary heart disease that associated with diabetes [18]. The aim of this study was to discover the age and gender characteristics of the younger (<60 years) and the older (≥60 years) T2DM subjects.

2. Patients and methods

This study was conducted in Baghdad/ Iraq, during (October to December 2016), on 299 type 2 diabetic patients (139 females and 160 males) who was attending the Outpatient Clinic at the National Diabetes Center/ Al-mustansiriya University. The age of the subjects ranged between (28-84) years with a mean age (57.59) years. The subjects were segregated into two groups: a younger age group (age: <60 years; n=157) and an older group (age: ≥60 years; n=142). All the subjects were using conventional therapy for diabetes in addition to dieting. After obtaining their written consent, the subjects were examined for weight, height, and for their blood pressure (BP). The information pertaining to age, gender, duration of diabetes, cigarette smoking, and socioeconomic status was recorded in special case records. Blood samples were gathered from the subjects to conduct a series of laboratory investigations using standard protocols for estimation of FPG, HbA1c%, total cholesterol, triglycerides (TG), low density lipoprotein cholesterol (LDL-c), and high density lipoprotein cholesterol (HDL-c). Smoking status was determined by questionnaires, which were designed by interviewers according to WHO guidelines [19]. According to the number of cigarettes smoked per day, the smokers were divided into three categories: 1-10, 11-20 and >20 cigarettes/day. Furthermore, the smokers were divided into three groups according to the duration of smoking: 5 years, 6-10 years and >10 years. The means of height and weight were used to calculate the body mass index (BMI) [20]. According to BMI, individuals were classified into normal weight (BMI: 18.5-24.99 kg/m²), overweight (BMI: 25-29.99 kg/m²), and obese (BMI: ≥30 kg/m²) [21].

Classification of dyslipidemia was based on ATP III categorization using lipoprotein thresholds of TG (≥150 mg/dl) for total cholesterol (≥200 mg/dl), LDL-c (≥100 mg/dl) for and (<40 mg/dl consider low and ≥60 mg/d consider high) for HDL-c as cutoff limits for dyslipidemia [22]. Diabetes diagnostic criteria, employment was done according to 2018 guidelines of the American Diabetes Association. When Patient fasting plasma glucose ≥126 mg/dL was considered to be diabetic [23]. Glycemic control among diabetic subjects was based on the WHO recommendation and classified according to FPG (mg/dL) concentration into: good (FPG: <120), fair (FPG: 120-160), and bad (FPG: ≥160) [24]. Depending on HbA1c% measurement, the glycemic control was categorized as a good (<7%), an acceptable (7% to 8%), and poor control (≥8%) [25]. In a sitting position the individual had rested for 5 minutes and BP was measured from the right arm. If the systolic BP is >130 mmHg or the diastolic BP is >90 mm Hg the patient was considered Hypertension [26]. In the morning blood samples (10 ml each) were collected from each subject during a single outpatient visit were obtained after an overnight fast (8-10) hour. Plasma glucose was measured by the oxides peroxide method [27]. Glycated hemoglobin was measured by using the Variant HbA1c program developed by BIO-Rad The Variant HbA1c program utilizes the principles of ion exchange high Performance Liquid Chromatography (HPLC) for the automatic and accurate separation of hemoglobin A1C (HbA1c) [25, 28]. Determination of total cholesterol [29], HDL-c, and TG was performed using enzymatic methods [30], and LDL-c was calculated [31]. VLDL-c (mg/dL) was estimated by the formula: VLDL-C (mg/dL) = TG ÷ 5 [32]. Statistical analyses included Z test with values quoted as mean (SD) for within gender comparisons between the two age groups (<60 years old vs. ≥60 years old). The Chi-
square test was used for comparison of the percentages. The p-value at <0.05 was considered statistically significant.

3. Results
The mean (SD) age of those who were <60 years (n=157) was 49.17 (7.31) years and the mean (SD) age of subjects who were ≥ 60 years (n=142) was 64.6 (4.8) years. The male-to-female ratio among the younger age group was 86/71 (1.2/1) and the male-to-female ratio of the older was 74/68 (1.1/1). (Table 1)

Table 1. Anthropometric measures and blood pressure of the two groups.

| Parameter                  | Subjects <60 years | Subjects ≥60 years |
|----------------------------|--------------------|--------------------|
|                            | All n=157          | Men n=86           |
|                            | Women n=71         | All n=142          |
|                            | Men n=74           |
|                            | Women n=68         |
| Age (Years)                | 49.17+7.31**       | 47.9+7.6b          |
|                            | 50.58+6.69d        | 67.04+5.1          |
|                            | 67.5+5.63          | 66.53+4.43         |
| Weight (kg)                | 83.4+15.32*        | 87.89+13.25a       |
|                            | 77.96+15.98        | 79.48+14.47        |
|                            | 79.96+5.19         | 81.9+15.31         |
|                            | 67.04+7.87         | 76.85+13.11        |
| Height (cm)                | 166.45+10.55**     | 174.07+5.75b       |
|                            | 157.23+7.09c       | 161.88+10.63       |
|                            | 169.07+7.87        | 154.06+7.16        |
| BMI (kg/m²)                | 30.05+5.36         | 28.88+4.03         |
|                            | 31.46+6.37         | 30.38+5.58         |
|                            | 28.62+4.8          | 32.3+5.75          |
| Duration of DM (Years)     | 3.48+3.87**        | 3.4+3.7b           |
|                            | 3.59+4.09d         | 13.75+7.44         |
|                            | 13.72+7.58         | 13.78+7.33         |
| Systolic BP (mmHg)         | 125.8+12.87        | 125.35+12.34       |
|                            | 126.34+13.55       | 126.62+14.39       |
|                            | 127.03+15.41       | 126.18+13.27       |
| Diastolic BP (mmHg)        | 81.18+4.17         | 81.1+3.46          |
|                            | 81.27+4.91         | 81.34+6.07         |
|                            | 81.22+7.3          | 81.47+4.41         |

The values represented as mean (SD); p values were represented by stars as * and ** and by letters (a, b, c and d) as follows: * p<0.05, ** p<0.005 for all subjects: <60 years vs. ≥60 years, a= p<0.05, b= p<0.005 for men: <60 years vs. ≥60 years, c= p<0.05, d= p<0.005 for women: <60 years vs. ≥60 years.

The younger diabetic subjects were found to have a significantly longer duration of disease in comparison with the older subjects. The young diabetic subjects mean (SD) of diabetes was 3.48 (3.87) years vs. the older: 13.75 (7.44) years (p<0.005).
Table 2. Frequency distribution of the study sample of demographic variables and blood pressure of the two groups

| Parameters                  | Subjects <60 years | Subjects ≥60 years |
|-----------------------------|-------------------|--------------------|
|                             | All n=157         | Men n=86           | Women n=71         | All n=142 | Men n=74 | Women n=68 |
| Marital status              |                   |                    |                    |           |          |            |
| Yes                         | 137               | 73                 | 64                 | 142        | 74       | 68          |
| No                          | 20                | 13                 | 7                  | 0          | 0        | 0           |
| Not complete primary        | 2                 | 0                  | 2                  | 7          | 0        | 7           |
| Education                   |                   |                    |                    |           |          |            |
| Primary                     | 13                | 1                  | 12                 | 23         | 1        | 22          |
| Secondary                   | 31                | 11                 | 20                 | 37         | 11       | 26          |
| College                     | 111               | 74                 | 37                 | 75         | 62       | 13          |
| Other                       | 3                 | 3                  | 0                  | 1          | 0        | 1           |
| Occupation                  |                   |                    |                    |           |          |            |
| Housewife                   | 59                | 0                  | 59                 | 62         | 0        | 62          |
| Free work                   | 28                | 28                 | 0                  | 12         | 12       | 0           |
| Retired                     | 9                 | 9                  | 0                  | 49         | 46       | 3           |
| Employee                    | 58                | 46                 | 12                 | 18         | 16       | 2           |
| Others                      | 3                 | 3                  | 0                  | 1          | 0        | 1           |
| Economic status             |                   |                    |                    |           |          |            |
| Good                        | 77                | 66                 | 11                 | 32         | 26       | 6           |
| Medium                      | 47                | 17                 | 30                 | 77         | 47       | 30          |
| Poor                        | 33                | 3                  | 30                 | 33         | 1        | 32          |
| Hypertension                |                   |                    |                    |           |          |            |
| Yes                         | 30                | 15                 | 15                 | 28         | 14       | 14          |
| No                          | 127               | 71                 | 56                 | 114        | 60       | 54          |
| Duration of DM              |                   |                    |                    |           |          |            |
| < 5 yr                      | 87 (55.4)**       | 48 (55.8)**        | 39 (54.9)**        | 7 (4.9)    | 4 (5.4)  | 3 (4.4)     |
| 5-10 yr                     | 63 (40.1)         | 35 (40.7)          | 28 (39.4)          | 47 (33.1)  | 23 (31.1) | 24 (35.3)   |
| > 10 yr                     | 7 (4.5)**         | 3 (3.5)**          | 4 (5.6)**          | 88 (62)    | 47 (63.5) | 41 (60.3)   |
| No. of cigarette/day N=150  |                   |                    |                    |           |          |            |
| Zero                        | 88 (56.1)*        | 28 (32.6)          | 60 (84.5)*         | 61 (43)    | 15 (20.3) | 46 (67.6)   |
| 1-9                         | 40 (25.5)         | 29 (33.7)          | 11 (15.5)          | 47 (33.1)  | 27 (36.5) | 20 (29.4)   |
| 10-20                       | 20 (12.7)         | 20 (23.3)          | 0 (0)              | 22 (15.5)  | 20 (27.0) | 2 (2.9)     |
| >20                         | 9 (5.7)           | 9 (10.5)           | 0 (0)              | 12 (8.5)   | 12 (16.2) | 0 (0)       |
| Duration of diabetis N=150  |                   |                    |                    |           |          |            |
| < 5                         | 10(14.5)**        | 4 (6.9)            | 65 (54.5)**        | 0 (0)      | 0 (0)    | 0 (0)       |
The younger diabetic subjects, particularly the males, showed a smaller number of smokers (67.5%) in comparison with the older subjects (79.7%). Also the older diabetic subjects generally have a larger number of cigarettes per day than the younger patients (Table 2). Smoking levels of 10-20 and >20 cigarettes/day was seen more in the older than the younger patients, also the lowest level of smoking (1-9/day) was more among the older subjects. In regard to gender, the older males were heavier smokers than the younger males, but there was no significant difference between the number of smoked cigarettes in regard to females. (Table 2) The duration of smoking was longer among the older diabetic subjects, particularly the males. And the older females showed no significant difference in the duration of smoking in comparison to the younger one.

The older females showed a higher number of Stage I Hypertensive subjects, among them (55; 80.9%) compared to the younger females (56 ;78.9%), (Table 3). While the number of younger male subjects was (73 ;84.9%) which having a higher number of Stage I Hypertension general, was marginally higher than among the older group (p<0.05).

The number of subjects having stage II hypertension was significantly higher among the older males in comparison to the younger ones: 14 (18.9%) vs. 13 (15.1%) will show no significant difference between the two groups (Table 3).

Table 3. Assessment of the prevalence of CHD risk factors in the two groups.
| Parameters          | Subjects <60 years   | Subjects ≥60 years   |
|---------------------|----------------------|----------------------|
|                     | All n=157 Men n=86   | Women n=71          | All n=142 Men n=74 Women n=68 |
| TG ≥150 mg/dL       | 55 (35.0)            | 26 (30.2)           | 29 (40.8)           | 55 (38.7) | 23 (31.1) | 32 (47.1) |
| Total cholesterol /HDL-C Ratio ≥5 | 28 (17.8)*            | 14 (16.3)           | 14 (19.7)*           | 46 (32.4) | 17 (23.0) | 29 (42.6) |
| Optimum (<6.8%)    | 23 (14.6)            | 9 (10.5)            | 14 (19.7)*           | 18 (12.7) | 14 (18.9) | 4 (5.9) |
| HbA1c %             |                      |                     |                      |           |           |           |
| Acceptable (6.8-7.6%) | 28 (17.8)            | 16 (18.6)           | 12 (16.9)           | 20 (14.1) | 12 (16.2) | 8 (11.8) |
| Poor (≥7.6%)        | 106 (67.5)           | 61 (70.9)           | 45 (63.4)*           | 104 (73.2) | 48 (64.9) | 56 (82.4) |
| Fasting Plasma Glucose (mmol/L) |                   |                     |                      |           |           |           |
| Good (<120)         | 14 (8.9)             | 7 (8.1)             | 7 (9.9)              | 6 (4.2) | 4 (5.4) | 2 (2.9) |
| Fair (120-160)      | 34 (21.7)            | 17 (19.8)*          | 17 (23.9)           | 41 (28.9) | 26 (35.1) | 15 (22.1) |
| Bad (>160)          | 109 (69.4)           | 62 (72.1)           | 47 (66.2)           | 95 (66.9) | 44 (59.5) | 51 (75) |
| BMI (kg/m²)         |                      |                     |                      |           |           |           |
| Normal (18-24.99)   | 23 (14.6)            | 14 (16.3)           | 9 (12.7)             | 19 (13.4) | 13 (17.6) | 6 (8.8) |
| Overweight (25-29.99) | 58 (36.9)            | 40 (46.5)           | 18 (25.4)           | 56 (39.4) | 37 (50.0) | 19 (27.9) |
| Obese (≥30)         | 76 (48.4)            | 32 (37.2)           | 44 (62.0)           | 67 (47.2) | 24 (32.4) | 43 (63.2) |
| SBP <120 and DBP <80| 0 (0)                | 0 (0)               | 0 (0)                | 0 (0) | 0 (0) | 0 (0) |
| Elevated SBP 120-129 and DBP < 80 | 2 (1.3)            | 0 (0)*               | 2 (2.8)             | 8 (5.6) | 8 (10.8) | 0 (0) |
| Blood Pressure (mmHg) |                      |                     |                      |           |           |           |
| Stage I HT SBP 130-139 or DBP 80-89 | 129 (82.2)         | 73 (84.9)*           | 56 (78.9)           | 107 (75.4) | 52 (70.3) | 55 (80.9) |
| Stage II HT SBP ≥ 140 or DBP ≥ 90 | 26 (16.6)            | 13 (15.1)           | 13 (18.3)           | 27 (19.0) | 14 (18.9) | 13 (19.1) |

The value represented as the number of subjects (n) and percentage (%).
P values were represented by stars as * and ** and by letters (a, b, c and d) as follows: * $p<0.05$, ** $p<0.005$ for all subjects: <60 years vs. ≥60 years, a = $p<0.05$, b = $p<0.005$ for men: <60 years vs. ≥60 years, c = $p<0.05$, d = $p<0.005$ for women: <60 years vs. ≥60 years.

The number of subjects having diastolic hypertension was higher among the younger subjects than the old one in general and the younger men was slightly higher than old men in comparison with the young men (NS). (Table 3)

The mean (SD) of systolic BP was higher in the older diabetic subjects; in general and in men, in comparison with the younger subjects (126.62+14.39 mmHg vs. 125.8+12.87 mmHg and 127.03+15.41 mmHg vs. 125.35+12.34 mmHg [NS], respectively). In older men, it has been just marginally higher in comparison with the younger males (NS), (Table 1). The mean (SD) diastolic BP was nearly equal in both the young males and females (81.1+3.46 mmHg vs. 81.2+7.3 mmHg and 81.1+3.46 mmHg vs. 81.4+4.4 mmHg [NS], respectively). (Table 1)

The BMI of the older diabetic subjects, as well as in females was generally higher than in younger patients, but the younger and older males was nearly equal, there is (NS) increment of BMI in comparison between groups. (Table 1)

The young diabetic subjects, in general, males and females showed higher mean (SD) of HbA1c%, in comparison with the older men subjects ($p<0.05$), this is the same for first reading and for the second reading (after 3 months treatment) (Table 1). Moreover, the mean (SD) of FPG was higher among the younger diabetic subjects (The young diabetic subjects, in general, men showed higher mean (SD) of FBG while women show the opposite), in comparison with the older men and women subjects ($p<0.05$) ($p<0.005$) respectively. (Table 4)

### Table 4. Selected biochemical parameters of the two groups.

| Parameters          | Subjects <60 years | Subjects ≥60 years |
|---------------------|--------------------|--------------------|
|                     | All n=157          | Men n=86           | Women n=71       | All n=142          | Men n=74           | Women n=68          |
| Hb (g/dl)           | 13.37±1.36         | 13.91±1.28         | 12.72±1.16       | 13.17±1.34         | 13.55±1.35         | 12.75±1.25         |
| FPG1 (mg/dl)        | 215.15±90          | 225.64±99.42a      | 202.45±76.74c    | 209.63±78.42       | 186.39±61.09       | 234.91±87.35       |
| FPG2 (mg/dl)        | 162.39±62          | 164.64±57.22       | 159.68±65.43     | 158.42±50.43       | 149.18±49.62       | 168.47±49.73       |
| S. Urea1 (mg/dl)    | 26.54±8.78*        | 27.1±9.92          | 25.85±7.18c      | 29.37±10.15        | 28.78±9.04         | 30.01±11.26        |
| S. Urea2 (mg/dl)    | 25.16±7.98         | 26.18±8.90         | 23.93±6.56       | 26.93±8.39         | 27.79±9.01         | 25.99±7.61         |
| S. Uric acid1 (mg/dl)| 4.1±1.3**         | 4.26±1.39a         | 3.9±1.17c        | 4.7±1.62           | 4.96±1.69          | 4.41±1.49          |
| S. Uric acid2 (mg/dl)| 3.85±1.11         | 3.96±1.17a         | 3.72±1.03        | 4.2±1.32           | 4.41±1.4          | 3.98±1.19          |
| HbA1c %1            | 9.18±2.41          | 9.32±2.28a         | 9.02±2.57        | 8.99±2.0           | 8.46±1.89          | 9.56±1.98          |
| HbA1c %2            | 8.54±2.27          | 8.62±2.22a         | 8.44±2.34        | 8.32±1.76          | 7.74±1.44          | 8.95±1.87          |
| S. Chol1 (mg/dl)    | 169.85±47          | 166.41±45.3c       | 174.01±49.31     | 191.75±55.31       | 181.11±52.28       | 203.32±56.31       |
| S. Chol2            | 157.33±47          | 151.29±43          | 164.65±50.31     | 164.88±43.31       | 158.58±42          | 171.74±43          |
The prevalence of hypercholesterolemic subjects who have a total cholesterol ≥200 mg/dL was higher in the older diabetic subjects in general (57 (40.1%) vs. 42 (26.8%), p<0.05) and in females (32 (47.1%) vs. 18 (25.4%; p<0.05), in comparison with the younger diabetics. In the males, the difference was marginal (NS). (Table 3)

The mean (SD) level of total cholesterol was significantly higher in the older subjects, in general (191.75±55.31 mg/dL vs. 169.85±47.38 mg/dL; p<0.005) and this is the same for the second reading (after 3 months treatment.) in women (203.32±56.56 mg/dL vs. 174.01±49.3 mg/dL; p<0.005), in men but marginally higher (NS) in younger males. (Table 4)

The difference in prevalence of excess levels of LDL-c was significant between the younger and the older subgroups. The mean (SD) level of LDL-c was significantly higher in the older patients, as well as females (131.19±52.88 mg/dL vs. 100.59±44.66 mg/dL; p<0.05), compared with the younger diabetic subjects, but the males (109.36±46.58 mg/dL vs. 94.67±43.6 mg/dL; p<0.05). (Table 4)

Low levels of HDL-c (<40 mg/dL mg/dL) were higher prevalence among the older diabetic subjects in general and in females, when compared with the younger subjects (8 (11.8%) vs. 7 (9.9%)(NS); While the mean (SD) level of HDL-c was significantly higher in the younger patients, as well as females (44.31±5.97 mg/dL vs. 42.07±5.01mg/dL; p<0.05), compared with the older diabetic subjects. and this is the same for the second reading (after 3 months treatment.) (Table 4)

The prevalence of diabetic subjects who have unfavorable total cholesterol/HDL-C ratio (≥5) was significantly higher among the older subjects than the younger groups (46 (32.4%) vs. 28 (17.8%; p<0.05), (Table 3). The mean (SD) of total cholesterol/HDL-C ratio was generally significantly higher among the younger diabetic subjects and in both males and females, (Table 4). The total cholesterol/HDL-C ratio of the younger diabetic subjects in general was 5.3 (1.4) vs. 4.7 (0.9), p<0.005.
The prevalence hypertriglyceridemia (≥ 150 mg/dL) among the younger subjects was insignificantly different in regard to the age and gender. (Table 3). The mean (SD) level of TG concentrations was higher among the older than the younger subjects in general (162.96±90.39 mg/dL vs. 152.71±83.45mg/dL) but insignificantly different between the males and females and this is the same for the second reading (after 3 months treatment.). (Table 4)

The mean (SD) concentration of VLDL in the older group was generally higher than that of the younger group (162.96±90.39 mg/dL vs. 152.71±83.45 mg/dL), (Table 4).

In general, the younger subjects, both males and females showed significant difference in the level of socioeconomic status in comparison with the older subjects. (Table 2) Finally the diabetes and antihypertensive medication used by both group were shown in (Table 5)

Table 5. Drugs used in the two groups

| Parameters | Subjects <60 years | Subjects ≥60 years |
|-----------|-------------------|-------------------|
|           | All n=157 | Men n=86 | All n=142 | Men n=74 | Women n=68 |
| OHA       | 114 (72.6%) | 63 (73.3%) | 51 (71.8%) | 58 (78.4%) | 40 (58.8%) |
| Insulin   | 11 (7.0%) | 7 (8.1%) | 4 (5.6%) | 9 (12.2%) | 7 (10.3%) |
| OHA+Insulin | 28 (17.8%) | 14 (16.3%) | 14 (19.7%) | 30 (21.1%) | 21 (30.9%) |
| None      | 129 (82.2%) | 71 (82.6%) | 58 (81.7%) | 60 (81.1%) | 54 (79.4%) |
| ACEI      | 15 (9.6%) | 12 (13.9%) | 3 (4.2%) | 9 (6.3%) | 3 (4.4%) |
| ARB       | 0 (0%) | 0 (0%) | 0 (0%) | 6 (4.2%) | 2 (2.7%) |
| BB        | 4 (2.5%) | 0 (0%) | 4 (5.6%) | 4 (2.8%) | 2 (2.7%) |
| CCB       | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Combined Rx | 9 (5.7%) | 3 (3.5%) | 6 (8.5%) | 9 (6.3%) | 4 (5.4%) |
| Antiplatlets | Yes | 4 (2.5%) | 2 (2.3%) | 2 (2.8%) | 1 (1.4%) |
| Statins   | Yes | 33 (21.0%)* | 12 (13.9%)** | 21 (29.6%) | 21 (33.1%) |
| Fibrates  | No | 153 (97.5%) | 84 (97.7%) | 69 (97.2%) | 73 (98.6%) |
|          | Yes | 6 (3.8%) | 4 (4.7%) | 2 (2.8%) | 3 (4.4%) |

The value represented as the number of subjects (n) and percentage (%)

P values were represented by stars as * and ** and by letters (a, b, c and d) as follows: * p<0.05, ** p<0.005 for all subjects: <60 years vs. ≥60 years, a= p<0.05, b= p<0.005 for men: <60 years vs. ≥60 years, c= p<0.05, d= p<0.005 for women: <60 years vs. ≥60 years.
4. Discussion
Diabetes and Cardiovascular as a sickness, do as two sides of the same coin: patients with ischemic cardiovascular diseases often have diabetes or pre-diabetes. Diabetes as well as is considered as vital risk factor for cardiovascular disease [33]. In this study, different factors were considered in regard to the age and sex, the cardiovascular risk factors. Most of the search chronic heart disease risk factors emerge to concentrate among the older diabetic subjects who were >60-year-old in comparison with the younger subjects. The older diabetic subjects in general, both the male and the female subgroups shared a significantly longer duration of diabetes, higher diastolic BP, higher HbA1c%, higher FPG, larger number of hypercholesterolemic subjects, a larger number of unfavorable total cholesterol/HDL-C ratio (≥5). All these trends have an adverse effect on the outcome of diabetes among the older age group, and thus closely related to Vega T et.al and most other associated studies [34]. Other most essential general characteristic effect on diabetes patients is the glycemic control. Glycemic control through the intensive treatment of hyperglycemia have great effect on cardiovascular risk reduction in type 2 DM and this have investigated by several clinical trials [35]. Fasting plasma glucose and hyperglycemia in the diabetic range appears to be associated with CV disease risk independent of fasting glucose levels as a predictor of CHD [36]. Hypertension is the most important risk factor for premature cardiovascular disease; it is more common as cigarette smoking, overweight and obesity, dyslipidemia, and diabetes, which are the other major risk factor [37]. Glycemic control is tightly associated with a high - plasma level of triglycerides, low-density lipoprotein cholesterol, a low level of high-density lipoprotein cholesterol, which is called diabetic dyslipidemia [38]. The most important cardiovascular risk factors are HDL-C and total cholesterol/HDL-C ratios, there for the reduction in cardiovascular risk the occur not only on lowering total cholesterol and LDL-C levels, but also on increasing HDL-C values [39]. In this study showed a pattern of hypertriglyceridemia, low HDL-C, relatively high total cholesterol and increased LDL-C levels in older group females of the diabetic population and thus closely related to Maria Lazo-Porras et al. Peru migrant cohort study [40]. The older diabetic females were distinguished by having a higher mean (SD) BMI: (32.3±5.75), a higher total cholesterol and LDL-C means, and a larger number of subjects with low HDLC than the younger diabetic males. The most probable explanation is that the higher prevalence of obesity among the older subgroups in comparison with the younger subgroups, and this will lead to higher cardiovascular complication in both groups [41]. The diabetic females in general are more susceptible to increased cardiovascular risk factors and mortality than diabetic males, some of the possible reasons, including the contribution of sex hormones and sex-specific risk factors [42]. In addition to the cardiovascular factors that were found in this study, the older diabetic males than female and showed more risky smoking trends than the younger males and this is closely related to the study of Shamima Akter et. Al [43, 44]. The number of smokers, the number of smoked cigarettes per day and the duration of smoking were significantly higher among the older males than among the younger males. A lot of evidence found that smoking increases the risk of incident diabetes and mortality [45], in addition to the other risks that were generally higher among the older diabetics, as well Smoking was an independent risk factor for stroke in both sexes [46] The prevalence rates are higher in high-income countries, although most diabetes patients live in low- and middle-income countries, where the lower socioeconomic groups are disproportionately affected [47]. Sex and regional differences and prevalence of obesity related diabetes developed throughout the last 3 decades, reflecting complex relationships with differences in ethnicity, culture, lifestyle, socioeconomic status and social roles [48], in this study, we found that (49%) of younger diabetes patient have good economic state while (54%) of older diabetes patients have medium economic state. There was no difference in the duration of diabetes in the younger and older subgroups in spite of that, the high percent (62%) of long duration of diabetes (> 10 years) in the older group. This is due to the Insulin sensitivity, which appears to be declining with age, in addition to a lot of factors contributing to age-associated insulin resistance includes visceral adiposity and associated adipokines and inflammation, oxidative stress, mitochondrial dysfunction, and possibly an intrinsic decline in insulin sensitivity in muscle fibers [49].
The current overweight/obesity and the associated dyslipidemia and BP were generally more prominent among the older diabetics and the older females in particular, making them a distinct group of T2DM with regards to clinical features, comorbidities, targets of therapy, and prognosis [50]. The younger T2DM subjects have less severe comorbidities and CHD risk factors [51]. The obesity in general and the metabolic syndrome in particular are expected to play a lesser role in the pathogenesis of late-onset T2DM and its evolution. Future research, needing which can lead to understanding a lot of mechanisms that may be contributing to the difference in pathogenically, clinically and prognostically between different sex and age sub group in regard to the treatment for diabetes and micro- and macro-vascular disease [52].

5. Conclusion
Cardiovascular risk factors are significantly higher among older type 2 diabetics (<60 years), particularly females, including dyslipidemia, smoking trends, hypertension, high body mass index. This group of diabetics requires a more stringent approach of therapy.

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