|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Supplementary Table 1. Age and Gender Distribution of Study Population (*n*, %)** | | | | | | |
|  | General Population (*n* = 801,926) | | Osteoarthritis Patients (*n* = 93,855) | | Subjects with Health Check-up (*n* = 233,879) | |
| Age |  |  |  |  |  |  |
| 20-24 | 69,110 | (8.62) | 1,102 | (1.17) | 5,674 | (2.43) |
| 25-29 | 62,812 | (7.83) | 1,227 | (1.31) | 15,570 | (6.66) |
| 30-34 | 79,575 | (9.92) | 1,844 | (1.96) | 22,178 | (9.48) |
| 35-39 | 76,378 | (9.52) | 2,306 | (2.46) | 18,895 | (8.08) |
| 40-44 | 90,825 | (11.33) | 3,929 | (4.19) | 34,474 | (14.74) |
| 45-49 | 85,843 | (10.70) | 6,199 | (6.60) | 26,925 | (11.51) |
| 50-54 | 87,910 | (10.96) | 10,732 | (11.43) | 32,852 | (14.05) |
| 55-59 | 71,573 | (8.92) | 12,420 | (13.23) | 23,603 | (10.09) |
| 60-64 | 49,544 | (6.18) | 11,524 | (12.28) | 19,934 | (8.52) |
| 65-69 | 39,792 | (4.96) | 11,995 | (12.78) | 12,301 | (5.26) |
| 70-74 | 36,883 | (4.60) | 12,879 | (13.72) | 12,739 | (5.45) |
| 75-79 | 26,193 | (3.27) | 9,599 | (10.23) | 5,223 | (2.23) |
| 80-84 | 15,016 | (1.87) | 5,294 | (5.64) | 2,739 | (1.17) |
| ≥ 85 | 10,508 | (1.31) | 2,805 | (2.99) | 772 | (0.33) |
|  |  |  |  |  |  |  |
| Sex |  |  |  |  |  |  |
| Male | 396,338 | (49.42) | 30,105 | (32.08) | 126,107 | (53.92) |
| Female | 405,624 | (50.58) | 63,750 | (67.92) | 107,772 | (46.08) |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Supplementary Table 2. Age-Group Specific Prevalence of Gastrointestinal Bleeding Risk Factors in Osteoarthritis Patients (%)** | | | | | | | | | | | | | | |
|  | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75-79 | 80-84 | ≥85yr |
| Comorbid Conditions |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Peptic Ulcer | 6.62 | 8.64 | 9.27 | 10.88 | 13.82 | 14.60 | 18.20 | 18.54 | 20.21 | 21.43 | 23.45 | 21.70 | 20.10 | 16.33 |
| Diabetes | 0.45 | 0.73 | 1.57 | 3.38 | 5.17 | 7.89 | 10.98 | 14.74 | 20.10 | 24.01 | 27.06 | 27.42 | 25.71 | 18.29 |
| Liver Disease | 3.99 | 4.48 | 7.32 | 8.72 | 8.02 | 9.10 | 10.45 | 10.72 | 10.92 | 10.55 | 9.41 | 7.84 | 6.78 | 4.88 |
| Chronic Renal Failure | 0.00 | 0.08 | 0.22 | 0.22 | 0.33 | 0.26 | 0.45 | 0.42 | 0.69 | 1.00 | 1.37 | 1.25 | 1.95 | 1.60 |
| Gastroesophageal Reflux Disease | 12.98 | 14.34 | 16.38 | 17.74 | 21.71 | 22.58 | 26.61 | 27.97 | 29.28 | 30.28 | 30.76 | 27.32 | 24.16 | 18.18 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Concomitant Drugs\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Aspirin | 0.09 | 0.08 | 0.11 | 0.82 | 1.60 | 3.68 | 6.63 | 11.55 | 17.36 | 20.99 | 25.57 | 26.26 | 27.14 | 23.28 |
| Clopidogrel | 0.00 | 0.00 | 0.00 | 0.09 | 0.33 | 0.76 | 1.13 | 2.48 | 3.87 | 5.49 | 7.42 | 9.22 | 9.44 | 8.20 |
| Cilostazol | 0.00 | 0.00 | 0.05 | 0.09 | 0.33 | 0.37 | 0.54 | 1.12 | 1.79 | 2.16 | 3.03 | 3.34 | 3.17 | 2.46 |
| NSAIDs | 5.99 | 6.52 | 7.59 | 11.14 | 15.47 | 18.18 | 24.13 | 27.73 | 31.35 | 33.06 | 34.87 | 35.83 | 36.46 | 32.87 |
| Steroid | 1.27 | 0.82 | 1.46 | 1.99 | 2.04 | 2.63 | 3.07 | 3.48 | 4.29 | 4.65 | 5.26 | 5.14 | 5.04 | 3.99 |
| Anticoagulants† | 0.09 | 0.00 | 0.05 | 0.00 | 0.13 | 0.11 | 0.12 | 0.20 | 0.34 | 0.39 | 0.55 | 0.81 | 0.68 | 0.68 |
| SSRI | 0.09 | 0.24 | 0.16 | 0.30 | 0.53 | 0.42 | 0.73 | 0.63 | 0.76 | 1.18 | 1.50 | 1.73 | 1.72 | 1.43 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. of Risk Factors |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ≥ 1 | 24.68 | 28.20 | 32.48 | 38.33 | 46.75 | 51.12 | 61.52 | 67.51 | 73.79 | 77.17 | 80.88 | 80.77 | 80.19 | 72.48 |
| ≥ 2 | 6.17 | 6.44 | 9.06 | 12.97 | 16.95 | 21.52 | 28.66 | 34.63 | 41.73 | 47.09 | 51.56 | 51.10 | 49.06 | 39.82 |
| ≥ 3 | 0.64 | 1.14 | 1.95 | 3.43 | 4.61 | 6.50 | 9.76 | 12.79 | 18.05 | 21.46 | 25.51 | 24.29 | 22.82 | 14.72 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. of Risk Factors (Excluding Concommitant NSAIDs Use) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ≥ 1 | 21.42 | 24.45 | 28.85 | 33.43 | 39.78 | 44.14 | 52.87 | 58.48 | 65.07 | 69.02 | 72.94 | 72.61 | 70.91 | 61.35 |
| ≥ 2 | 3.90 | 4.56 | 6.62 | 9.24 | 11.61 | 15.03 | 19.92 | 24.44 | 30.85 | 35.94 | 40.54 | 38.83 | 36.78 | 27.20 |
| ≥ 3 | 0.27 | 0.41 | 1.03 | 1.34 | 2.24 | 2.76 | 5.12 | 7.03 | 10.46 | 13.00 | 16.27 | 15.20 | 13.51 | 8.34 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. of Risk Factors  (After H. pylori Prevalence Imputation) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ≥ 1 | 45.46 | 47.43 | 61.88 | 63.92 | 74.85 | 76.69 | 84.82 | 87.54 | 90.25 | 91.32 | 92.20 | 92.09 | 91.97 | 88.77 |
| ≥ 2 | 11.62 | 12.39 | 19.31 | 23.33 | 33.14 | 36.86 | 48.61 | 54.65 | 61.99 | 65.57 | 69.00 | 68.54 | 67.30 | 59.04 |
| ≥ 3 | 1.91 | 2.44 | 5.31 | 7.72 | 10.97 | 14.39 | 21.50 | 26.17 | 32.75 | 37.27 | 40.73 | 39.97 | 38.42 | 29.95 |
| NSAIDs, non-steroidal anti-inflammatory drugs; SSRI, selective serotonin reuptake inhibitor | | | | | | | | |  |  |  |  |  |  |
| \* Subjects who were prescribed 60 days or more in 2013 | | | | | | | |  |  |  |  |  |  |  |
| † Warfarin, rivaroxaban, dabigatran, and apixaban were included | | | | | | | |  |  |  |  |  |  |  |

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| **Supplementary Table 3. Prevalence of Gastrointestinal bleeding Risk Factors in Subjects Who Performed Health Check-up (%)** | | | | | | | | | | | | | | | | |  |  |
|  | 20-24 | 25-29 | | 30-34 | 35-39 | 40-44 | | 45-49 | | 50-54 | | 55-59 | 60-64 | 65-69 | 70-74 | 75-79 | 80-84 | ≥85yr |
| Comorbid Conditions |  |  | |  |  |  | |  | |  | |  |  |  |  |  |  |  |
| Peptic Ulcer | 4.99 | 5.13 | | 5.15 | 6.29 | 10.74 | | 11.86 | | 15.02 | | 16.59 | 18.24 | 19.32 | 21.98 | 21.64 | 19.02 | 17.23 |
| Diabetes | 0.32 | 0.40 | | 0.72 | 1.79 | 3.47 | | 5.62 | | 8.96 | | 12.99 | 18.35 | 21.41 | 24.59 | 25.46 | 23.48 | 18.26 |
| Chronic Liver Disease | 2.33 | 2.94 | | 3.88 | 4.75 | 5.70 | | 6.93 | | 8.70 | | 9.58 | 10.12 | 9.29 | 8.48 | 7.29 | 6.06 | 5.44 |
| Chronic Renal Failure | 0.00 | 0.03 | | 0.05 | 0.05 | 0.16 | | 0.18 | | 0.27 | | 0.34 | 0.64 | 0.63 | 1.01 | 1.78 | 1.50 | 1.17 |
| Gastroesophageal Reflux Disease | 8.58 | 9.44 | | 9.90 | 11.28 | 19.82 | | 20.21 | | 24.78 | | 26.52 | 29.97 | 30.58 | 31.93 | 31.15 | 28.00 | 20.21 |
|  |  |  | |  |  |  | |  | |  | |  |  |  |  |  |  |  |
| Concomitant Drugs\* |  |  | |  |  |  | |  | |  | |  |  |  |  |  |  |  |
| Aspirin | 0.00 | 0.09 | | 0.11 | 0.43 | 1.22 | | 2.66 | | 6.00 | | 10.67 | 16.08 | 20.29 | 25.10 | 27.32 | 25.99 | 23.32 |
| Clopidogrel | 0.00 | 0.00 | | 0.05 | 0.06 | 0.23 | | 0.49 | | 1.14 | | 1.90 | 3.55 | 5.22 | 6.59 | 8.00 | 8.00 | 7.64 |
| Cilostazol | 0.00 | 0.00 | | 0.00 | 0.03 | 0.12 | | 0.22 | | 0.48 | | 0.83 | 1.37 | 1.81 | 2.39 | 3.01 | 2.59 | 2.85 |
| NSAIDs | 0.46 | 0.64 | | 1.04 | 1.56 | 2.53 | | 3.83 | | 7.01 | | 9.69 | 12.85 | 15.70 | 19.45 | 21.92 | 22.86 | 17.36 |
| Steroid | 0.25 | 0.28 | | 0.37 | 0.60 | 0.73 | | 0.88 | | 1.25 | | 1.73 | 2.09 | 2.97 | 3.34 | 3.96 | 3.65 | 2.72 |
| Anticoagulants† | 0.02 | 0.01 | | 0.02 | 0.04 | 0.04 | | 0.09 | | 0.10 | | 0.18 | 0.29 | 0.44 | 0.55 | 0.96 | 0.73 | 0.39 |
| SSRI | 0.07 | 0.06 | | 0.08 | 0.11 | 0.23 | | 0.25 | | 0.34 | | 0.38 | 0.54 | 0.76 | 1.01 | 1.44 | 1.61 | 2.07 |
|  |  |  | |  |  |  | |  | |  | |  |  |  |  |  |  |  |
| Personal Habits |  |  | |  |  |  | |  | |  | |  |  |  |  |  |  |  |
| Current Smoker | 27.00 | 29.17 | | 36.50 | 39.10 | 28.69 | | 26.21 | | 21.70 | | 19.32 | 15.27 | 12.71 | 10.40 | 9.02 | 7.05 | 5.44 |
| Problematic Drinker‡ | 26.98 | 24.66 | | 25.42 | 24.03 | 19.72 | | 18.06 | | 15.04 | | 11.92 | 8.91 | 18.13 | 12.43 | 8.48 | 6.54 | 4.66 |
|  |  |  | |  |  |  | |  | |  | |  |  |  |  |  |  |  |
| No. of Risk Factors |  |  | |  |  |  | |  | |  | |  |  |  |  |  |  |  |
| ≥ 1 | 51.52 | 51.80 | | 57.07 | 60.66 | 58.74 | | 60.25 | | 64.04 | | 68.09 | 72.83 | 77.76 | 80.41 | 80.91 | 78.93 | 69.95 |
| ≥ 2 | 16.94 | 17.98 | | 22.04 | 23.45 | 25.07 | | 26.18 | | 31.07 | | 34.62 | 40.20 | 47.45 | 50.43 | 51.31 | 47.10 | 38.21 |
| ≥ 3 | 2.22 | 2.62 | | 3.58 | 4.92 | 7.35 | | 8.25 | | 11.50 | | 13.88 | 17.20 | 22.58 | 24.81 | 25.50 | 21.10 | 15.54 |
|  |  |  | |  |  |  | |  | |  | |  |  |  |  |  |  |  |
| No. of Risk Factors (After H. pylori Prevalence Imputation) |  |  | |  |  |  | |  | |  | |  |  |  |  |  |  |  |
| ≥ 1 | 64.49 | 64.57 | | 75.42 | 77.18 | 80.44 | | 81.06 | | 86.08 | | 87.68 | 89.56 | 91.55 | 92.17 | 92.38 | 91.93 | 88.34 |
| ≥ 2 | 26.42 | 27.41 | | 36.57 | 38.97 | 42.96 | | 43.96 | | 51.13 | | 55.08 | 60.51 | 65.73 | 68.40 | 68.31 | 65.57 | 57.12 |
| ≥ 3 | 5.75 | 6.56 | | 11.31 | 12.74 | 16.48 | | 17.83 | | 23.34 | | 26.44 | 31.47 | 38.29 | 39.63 | 40.03 | 36.66 | 29.66 |
| NSAIDs, non-steroidal anti-inflammatory drugs; SSRI, selective serotonin reuptake inhibitor; H. pylori, Helicobacter pylori | | | | | | | | | | | | | | | | | |  |
| \* Subjects who were prescribed 60 days or more in 2013 | | |  | |  | |  | |  | |  |  |  |  |  |  |  |  |
| † Warfarin, rivaroxaban, dabigatran, and apixaban were included | | | | | | | | | | | |  |  |  |  |  |  |  |
| ‡ Men, > 4 standard drinks in a day or > 14 standard drinks in a week; Women, > 3 standard drinks in a day or > 7 standard drinks in a week; Aged 65 or more, > 1 standard drinks in a day or > 7 standard drinks in a week | | | | | | | | | | | | | | | | | | |