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| **Supplementary Table 1. Age and Gender Distribution of Study Population (*n*, %)** |
| 　 | General Population(*n* = 801,926) | Osteoarthritis Patients(*n* = 93,855) | Subjects withHealth 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 |