**Supplemental Table 1. Physician characteristics**

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| --- | --- | --- | --- | --- |
|  | **FRANCE** | **GERMANY** | **ITALY** | **SPAIN** |
|  | **N = 36**  | **N = 36**  | **N = 28**  | **N = 36**  |
| **Physician characteristics, mean ± SD** |   |   |   |   |
|  Number of years physician has treated migraine in the ER/A&E | 14.64 ± 6.33 | 13.03 ± 6.38 | 11.71 ± 5.64 | 16.83 ± 6.95 |
|  Number of patients with headache that were treated by the physician in 2017 | 350.50 ± 282.72 | 270.39 ± 209.43 | 291.43 ± 275.37 | 305.69 ± 241.83 |
|  Number of patients with migraine that were treated by the physician in 2017 | 128.00 ± 102.66 | 94.47 ± 90.89 | 205.18 ± 203.13 | 168.75 ± 175.70 |
| **ER/A&E characteristics, n (%)** |   |   |   |   |
|  Primary practice setting |   |   |   |   |
|   Academic hospital/teaching hospital/tertiary hospital | 14 (38.89%) | 23 (63.89%) | 12 (42.86%) | 24 (66.67%) |
|   Community hospital/general hospital | 21 (58.33%) | 12 (33.33%) | 16 (57.14%) | 9 (25.00%) |
|   Othera | 1 (2.78%) | 1 (2.78%) | 0 (0.00%) | 3 (8.33%) |
|  Number of physicians in ER/A&E |   |   |   |   |
|   1-10 | 8 (22.22%) | 17 (47.22%) | 4 (14.29%) | 5 (13.89%) |
|   11-25 | 17 (47.22%) | 13 (36.11%) | 15 (53.57%) | 19 (52.78%) |
|   26-50 | 10 (27.78%) | 2 (5.56%) | 8 (28.57%) | 11 (30.56%) |
|   More than 50 | 1 (2.78%) | 4 (11.11%) | 1 (3.57%) | 1 (2.78%) |
|  Number of hospital beds in ER/A&E |   |   |   |   |
|   1-25 | 12 (33.33%) | 26 (72.22%) | 8 (28.57%) | 14 (38.89%) |
|   26-50 | 11 (30.56%) | 7 (19.44%) | 10 (35.71%) | 13 (36.11%) |
|   51-100 | 8 (22.22%) | 1 (2.78%) | 6 (21.43%) | 6 (16.67%) |
|   More than 100 | 5 (13.89%) | 1 (2.78%) | 3 (10.71%) | 2 (5.56%) |
|   Unknown/not sure | 0 (0.00%) | 1 (2.78%) | 1 (3.57%) | 1 (2.78%) |
|  Number of patients with migraine that were treated in the physician's ER/A&E department in 2017 |   |   |   |   |
|   1-25 | 0 (0.00%) | 1 (2.78%) | 0 (0.00%) | 2 (5.56%) |
|   26-50 | 1 (2.78%) | 3 (8.33%) | 0 (0.00%) | 1 (2.78%) |
|   51-100 | 3 (8.33%) | 3 (8.33%) | 5 (17.86%) | 1 (2.78%) |
|   101-150 | 4 (11.11%) | 5 (13.89%) | 1 (3.57%) | 2 (5.56%) |
|   151-200 | 3 (8.33%) | 10 (27.78%) | 0 (0.00%) | 7 (19.44%) |
|   More than 200 | 25 (69.44%) | 14 (38.89%) | 22 (78.57%) | 23 (63.89%) |

Abbreviations: ER/A&E = emergency room/accident & emergency; SD = standard deviation.

a Other primary practice settings include clinic, emergency practice of registered doctors, emergency service in primary care, extra outpatient emergency, and private hospital.

**Supplemental Table 2. Patient characteristics and disease history**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **FRANCE** | **GERMANY** | **ITALY** | **SPAIN** |
|  | **N = 120** | **N = 120** | **N = 107** | **N = 120** |
| **Age at ER/A&E visit (years), mean ± SD** | 38.76 ± 13.45 | 41.48 ± 13.44 | 37.53 ± 12.93 | 39.45 ± 13.57 |
| **Sex, n (%)** |   |   |  |   |
|  Female | 78 (65.00%) | 78 (65.00%) | 60 (56.07%) | 84 (70.00%) |
|  Male | 42 (35.00%) | 42 (35.00%) | 47 (43.93%) | 36 (30.00%) |
| **Disease characteristics** |   |   |   |   |
|  Age at first migraine (years),mean ± SD | 31.65 ± 12.40 | 33.45 ± 13.26 | 32.19 ± 12.05 | 32.27 ± 12.72 |
|  Time from first migraine to the ER/A&E visit (years)**,** mean ± SD | 6.39 ± 6.87 | 8.27 ± 7.34 | 5.50 ± 6.74 | 6.51 ± 9.25 |
|  Patient previously hospitalized due to migraine, n (%) |   |   |   |   |
|   Yes | 49 (40.83%) | 55 (45.83%) | 57 (53.27%) | 27 (22.50%) |
|   No | 55 (45.83%) | 48 (40.00%) | 45 (42.06%) | 90 (75.00%) |
|   Unknown/not sure | 16 (13.33%) | 17 (14.17%) | 5 (4.67%) | 3 (2.50%) |
|  Number of non-migraine headache days in the month prior to the ER/A&E visit,mean ± SD | 3.79 ± 4.09 | 4.56 ± 6.03 | 5.21 ± 4.07 | 5.53 ± 6.03 |
|  Average duration of a non-migraine headache in the month prior to the ER/A&E visit (hours) ,mean ± SD | 7.49 ± 10.28 | 5.85 ± 5.55 | 10.25 ± 25.88 | 10.73 ± 10.84 |
|  Number of migraine days in the month prior to the ER/A&E visit,mean ± SD | 6.71 ± 3.84 | 6.83 ± 3.51 | 7.34 ± 2.77 | 8.05 ± 5.88 |
|  Average duration of a migraine episode in the month prior to the ER/A&E visit (hours) ,mean ± SD | 14.86 ± 12.35 | 13.58 ± 13.76 | 14.93 ± 30.37 | 19.50 ± 24.18 |
|  Number of prophylactic migraine treatments discontinued prior to the ER/A&E visit due to lack of efficacy or tolerability,mean ± SD | 1.42 ± 1.39 | 1.52 ± 1.34 | 1.51 ± 1.16 | 1.55 ± 1.14 |
|  History of menstrual-related migraine (female only), n (%) |   |   |   |   |
|   Yes | 35 (44.87%) | 25 (32.05%) | 29 (48.33%) | 30 (35.71%) |
|   No | 38 (48.72%) | 44 (56.41%) | 30 (50.00%) | 45 (53.57%) |
|   Unknown/not sure | 5 (6.41%) | 9 (11.54%) | 1 (1.67%) | 9 (10.71%) |
| **Medical conditions at the time of the ER/A&E visit, n (%)** |   |   |   |   |
|  AIDS/HIV | 1 (0.83%) | 0 (0.00%) | 0 (0.00%) | 1 (0.83%) |
|  Anemia | 0 (0.00%) | 2 (1.67%) | 11 (10.28%) | 14 (11.67%) |
|  Anxiety | 34 (28.33%) | 19 (15.83%) | 23 (21.50%) | 36 (30.00%) |
|  Asthma | 7 (5.83%) | 8 (6.67%) | 6 (5.61%) | 5 (4.17%) |
|  Any malignancy excluding malignant neoplasm of skin, including leukemia and lymphoma | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Cerebrovascular disease excluding stroke and transient ischemic attack | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 1 (0.83%) |
|  Chronic pulmonary disease | 1 (0.83%) | 4 (3.33%) | 3 (2.80%) | 4 (3.33%) |
|  Congestive heart failure | 0 (0.00%) | 2 (1.67%) | 0 (0.00%) | 0 (0.00%) |
|  Constipation | 11 (9.17%) | 7 (5.83%) | 8 (7.48%) | 11 (9.17%) |
|  Dementia | 0 (0.00%) | 1 (0.83%) | 0 (0.00%) | 2 (1.67%) |
|  Depression | 18 (15.00%) | 18 (15.00%) | 13 (12.15%) | 21 (17.50%) |
|  Diabetes with chronic complication | 0 (0.00%) | 0 (0.00%) | 1 (0.93%) | 0 (0.00%) |
|  Diabetes without chronic complication | 2 (1.67%) | 9 (7.50%) | 5 (4.67%) | 4 (3.33%) |
|  Diarrhea | 1 (0.83%) | 4 (3.33%) | 2 (1.87%) | 2 (1.67%) |
|  Epilepsy | 0 (0.00%) | 3 (2.50%) | 3 (2.80%) | 2 (1.67%) |
|  Hemiplegia or paraplegia | 1 (0.83%) | 1 (0.83%) | 1 (0.93%) | 1 (0.83%) |
|  Hypertension | 17 (14.17%) | 25 (20.83%) | 22 (20.56%) | 20 (16.67%) |
|  Inflammatory bowel disease | 3 (2.50%) | 3 (2.50%) | 4 (3.74%) | 1 (0.83%) |
|  Metastatic solid tumor | 2 (1.67%) | 0 (0.00%) | 0 (0.00%) | 1 (0.83%) |
|  Mild liver disease | 0 (0.00%) | 1 (0.83%) | 4 (3.74%) | 0 (0.00%) |
|  Moderate or severe liver disease | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Myocardial infarction | 2 (1.67%) | 1 (0.83%) | 0 (0.00%) | 2 (1.67%) |
|  Obesity | 17 (14.17%) | 19 (15.83%) | 16 (14.95%) | 27 (22.50%) |
|  Peptic ulcer disease | 3 (2.50%) | 1 (0.83%) | 3 (2.80%) | 0 (0.00%) |
|  Peripheral vascular disease | 0 (0.00%) | 0 (0.00%) | 3 (2.80%) | 2 (1.67%) |
|  Renal disease | 0 (0.00%) | 2 (1.67%) | 0 (0.00%) | 3 (2.50%) |
|  Rheumatologic disease | 0 (0.00%) | 5 (4.17%) | 0 (0.00%) | 4 (3.33%) |
|  Stroke | 0 (0.00%) | 1 (0.83%) | 0 (0.00%) | 2 (1.67%) |
|  Transient ischemic attack | 2 (1.67%) | 0 (0.00%) | 0 (0.00%) | 1 (0.83%) |
|  Visceral pain | 1 (0.83%) | 3 (2.50%) | 3 (2.80%) | 1 (0.83%) |
|  Other conditiona | 4 (3.33%) | 4 (3.33%) | 1 (0.93%) | 6 (5.00%) |
|  No other conditions | 38 (31.67%) | 38 (31.67%) | 38 (35.51%) | 37 (30.83%) |

Abbreviations: ER/A&E = emergency room/accident & emergency; AIDS/HIV = acquired immune deficiency syndrome/human immunodeficiency virus infection; SD = standard deviation.

a Other conditions at the time of the ER/A&E visit included acne, addiction, bipolar disorder, cervical hernia, hypercholesterolemia, hypothyroidism, infection of the upper respiratory tract, intestinal cramps, lactose intolerance, melanoma, psoriasis, post-traumatic stress disorder, skin allergies, and thoracic outlet syndrome.

**Supplemental Table 3**. **Pharmacologic migraine treatments in Francea**

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| --- | --- | --- | --- |
|  | **Used at the time of the ER/A&E visit****N=115** | **Administered during the ER/A&E visit****N=120** | **Prescribed upon discharge from ER/A&E****N=119** |
| **Acute migraine treatments, n (%)** |   |   |   |
|  Barbiturates | 0 (0.00%) | 4 (3.33%) | 2 (1.68%) |
|  COX inhibitors/NSAIDs | 34 (29.57%) | 60 (50.00%) | 40 (33.61%) |
|  Ergotamines | 8 (6.96%) | 15 (12.50%) | 9 (7.56%) |
|  Muscle Relaxants | 4 (3.48%) | 15 (12.50%) | 6 (5.04%) |
|  Neuroleptics | 3 (2.61%) | 9 (7.50%) | 7 (5.88%) |
|  Opioids | 15 (13.04%) | 41 (34.17%) | 16 (13.45%) |
|  Triptans | 20 (17.39%) | 39 (32.50%) | 64 (53.78%) |
|  Other  | 24 (20.87%) | 37 (30.83%) | 24 (20.17%) |
| **Prophylactic migraine treatments, n (%)** |  |   |   |
|  Amitriptyline | 14 (12.17%) | 4 (3.33%) | 11 (9.24%) |
|  Atenolol | 11 (9.57%) | 4 (3.33%) | 6 (5.04%) |
|  Bisoprolol | 3 (2.61%) | 1 (0.83%) | 1 (0.84%) |
|  Candesartan | 3 (2.61%) | 2 (1.67%) | 1 (0.84%) |
|  Carbamazepine | 1 (0.87%) | 1 (0.83%) | 0 (0.00%) |
|  Desipramine | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Desvenlafaxine | 0 (0.00%) | 1 (0.83%) | 1 (0.84%) |
|  Diltazem | 0 (0.00%) | 2 (1.67%) | 2 (1.68%) |
|  Divalproex | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Doxepin | 1 (0.87%) | 0 (0.00%) | 0 (0.00%) |
|  Duloxetine | 0 (0.00%) | 2 (1.67%) | 2 (1.68%) |
|  Flunarizine | 1 (0.87%) | 0 (0.00%) | 0 (0.00%) |
|  Fluoxetine | 4 (3.48%) | 0 (0.00%) | 5 (4.20%) |
|  Gabapentin | 7 (6.09%) | 0 (0.00%) | 5 (4.20%) |
|  Imipramine | 3 (2.61%) | 0 (0.00%) | 0 (0.00%) |
|  Lisinopril | 1 (0.87%) | 0 (0.00%) | 1 (0.84%) |
|  Methylergonovine | 0 (0.00%) | 1 (0.83%) | 1 (0.84%) |
|  Methysergide | 2 (1.74%) | 1 (0.83%) | 0 (0.00%) |
|  Metoprolol | 1 (0.87%) | 0 (0.00%) | 0 (0.00%) |
|  Milnacipran | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Nadolol | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Nebivolol | 1 (0.87%) | 0 (0.00%) | 1 (0.84%) |
|  Nimodipine | 1 (0.87%) | 0 (0.00%) | 0 (0.00%) |
|  Nortriptyline | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  OnabotulinumtoxinA | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Oxetorone | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Paroxetine | 2 (1.74%) | 2 (1.67%) | 2 (1.68%) |
|  Pindolol | 0 (0.00%) | 0 (0.00%) | 1 (0.84%) |
|  Pizotifen | 0 (0.00%) | 0 (0.00%) | 1 (0.84%) |
|  Pregabalin | 0 (0.00%) | 3 (2.50%) | 2 (1.68%) |
|  Propranolol | 15 (13.04%) | 5 (4.17%) | 9 (7.56%) |
|  Protriptyline | 0 (0.00%) | 0 (0.00%) | 1 (0.84%) |
|  Sertraline | 1 (0.87%) | 0 (0.00%) | 0 (0.00%) |
|  Timolol | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Topiramate | 2 (1.74%) | 2 (1.67%) | 5 (4.20%) |
|  Valproate | 1 (0.87%) | 0 (0.00%) | 1 (0.84%) |
|  Venlafaxine | 1 (0.87%) | 0 (0.00%) | 0 (0.00%) |
|  Verapamil | 2 (1.74%) | 0 (0.00%) | 1 (0.84%) |
|  Zonisamide | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Other  | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |

Abbreviations: ER/A&E = emergency room/accident & emergency; NSAID = nonsteroidal anti-inflammatory drug.

a There were five charts with missing information on treatment used at the time of migraine-related ER/A&E visits, and one chart with missing information on treatment prescribed upon discharge from ER/A&E.

**Supplemental Table 4. Pharmacologic migraine treatments in Germanya**

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| --- | --- | --- | --- |
|  | **Used at the time of the ER/A&E visit****N=111** | **Administered during the ER/A&E visit****N=119** | **Prescribed upon discharge from ER/A&E****N=116** |
| **Acute migraine treatments, n (%)** |   |   |   |
|  Barbiturates | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  COX inhibitors/NSAIDs | 50 (45.05%) | 68 (57.14%) | 34 (29.31%) |
|  Ergotamines | 3 (2.70%) | 3 (2.52%) | 3 (2.59%) |
|  Muscle Relaxants | 3 (2.70%) | 13 (10.92%) | 7 (6.03%) |
|  Neuroleptics | 5 (4.50%) | 22 (18.49%) | 14 (12.07%) |
|  Opioids | 2 (1.80%) | 13 (10.92%) | 1 (0.86%) |
|  Triptans | 33 (29.73%) | 56 (47.06%) | 57 (49.14%) |
|  Other  | 19 (17.12%) | 28 (23.53%) | 13 (11.21%) |
| **Prophylactic migraine treatments, n (%)** |  |   |   |
|  Amitriptyline | 11 (9.91%) | 3 (2.52%) | 16 (13.79%) |
|  Atenolol | 2 (1.80%) | 0 (0.00%) | 0 (0.00%) |
|  Bisoprolol | 5 (4.50%) | 2 (1.68%) | 9 (7.76%) |
|  Candesartan | 1 (0.90%) | 6 (5.04%) | 5 (4.31%) |
|  Carbamazepine | 5 (4.50%) | 1 (0.84%) | 6 (5.17%) |
|  Desipramine | 0 (0.00%) | 3 (2.52%) | 1 (0.86%) |
|  Desvenlafaxine | 0 (0.00%) | 0 (0.00%) | 1 (0.86%) |
|  Diltazem | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Divalproex | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Doxepin | 1 (0.90%) | 0 (0.00%) | 3 (2.59%) |
|  Duloxetine | 0 (0.00%) | 0 (0.00%) | 1 (0.86%) |
|  Flunarizine | 2 (1.80%) | 0 (0.00%) | 1 (0.86%) |
|  Fluoxetine | 1 (0.90%) | 2 (1.68%) | 1 (0.86%) |
|  Gabapentin | 0 (0.00%) | 3 (2.52%) | 2 (1.72%) |
|  Imipramine | 1 (0.90%) | 2 (1.68%) | 2 (1.72%) |
|  Lisinopril | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Methylergonovine | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Methysergide | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Metoprolol | 13 (11.71%) | 7 (5.88%) | 13 (11.21%) |
|  Milnacipran | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Nadolol | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Nebivolol | 0 (0.00%) | 0 (0.00%) | 1 (0.86%) |
|  Nimodipine | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Nortriptyline | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  OnabotulinumtoxinA | 1 (0.90%) | 1 (0.84%) | 1 (0.86%) |
|  Oxetorone | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Paroxetine | 1 (0.90%) | 0 (0.00%) | 0 (0.00%) |
|  Pindolol | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Pizotifen | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Pregabalin | 2 (1.80%) | 1 (0.84%) | 2 (1.72%) |
|  Propranolol | 8 (7.21%) | 1 (0.84%) | 5 (4.31%) |
|  Protriptyline | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Sertraline | 2 (1.80%) | 0 (0.00%) | 1 (0.86%) |
|  Timolol | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Topiramate | 2 (1.80%) | 1 (0.84%) | 3 (2.59%) |
|  Valproate | 3 (2.70%) | 2 (1.68%) | 3 (2.59%) |
|  Venlafaxine | 2 (1.80%) | 4 (3.36%) | 7 (6.03%) |
|  Verapamil | 2 (1.80%) | 1 (0.84%) | 2 (1.72%) |
|  Zonisamide | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Other  | 1 (0.90%) | 0 (0.00%) | 0 (0.00%) |

Abbreviations: ER/A&E = emergency room/accident & emergency; NSAID = nonsteroidal anti-inflammatory drug.

 a There were nine charts with missing information on treatment used at the time of migraine-related ER/A&E visits, one chart with missing information on treatment administered during migraine-related ER/A&E visits, and four charts with missing information on treatment prescribed upon discharge from ER/A&E.

**Supplemental Table 5. Pharmacologic migraine treatments in Italya**

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|  | **Used at the time of the ER/A&E visit****N=106** | **Administered during the ER/A&E visit****N=103** | **Prescribed upon discharge from ER/A&E****N=106** |
| **Acute migraine treatments, n (%)** |   |   |   |
|  Barbiturates | 2 (1.89%) | 0 (0.00%) | 1 (0.94%) |
|  COX inhibitors/NSAIDs | 49 (46.23%) | 57 (55.34%) | 26 (24.53%) |
|  Ergotamines | 14 (13.21%) | 7 (6.80%) | 17 (16.04%) |
|  Muscle Relaxants | 4 (3.77%) | 23 (22.33%) | 13 (12.26%) |
|  Neuroleptics | 10 (9.43%) | 15 (14.56%) | 15 (14.15%) |
|  Opioids | 5 (4.72%) | 24 (23.30%) | 4 (3.77%) |
|  Triptans | 24 (22.64%) | 26 (25.24%) | 35 (33.02%) |
|  Other  | 12 (11.32%) | 31 (30.10%) | 11 (10.38%) |
| **Prophylactic migraine treatments, n (%)** |  |   |   |
|  Amitriptyline | 24 (22.64%) | 6 (5.83%) | 20 (18.87%) |
|  Atenolol | 2 (1.89%) | 6 (5.83%) | 6 (5.66%) |
|  Bisoprolol | 2 (1.89%) | 1 (0.97%) | 3 (2.83%) |
|  Candesartan | 1 (0.94%) | 0 (0.00%) | 0 (0.00%) |
|  Carbamazepine | 3 (2.83%) | 3 (2.91%) | 4 (3.77%) |
|  Desipramine | 0 (0.00%) | 3 (2.91%) | 1 (0.94%) |
|  Desvenlafaxine | 0 (0.00%) | 1 (0.97%) | 2 (1.89%) |
|  Diltazem | 2 (1.89%) | 3 (2.91%) | 1 (0.94%) |
|  Divalproex | 0 (0.00%) | 1 (0.97%) | 0 (0.00%) |
|  Doxepin | 1 (0.94%) | 0 (0.00%) | 2 (1.89%) |
|  Duloxetine | 1 (0.94%) | 2 (1.94%) | 1 (0.94%) |
|  Flunarizine | 3 (2.83%) | 4 (3.88%) | 3 (2.83%) |
|  Fluoxetine | 3 (2.83%) | 4 (3.88%) | 1 (0.94%) |
|  Gabapentin | 3 (2.83%) | 3 (2.91%) | 1 (0.94%) |
|  Imipramine | 0 (0.00%) | 2 (1.94%) | 2 (1.89%) |
|  Lisinopril | 1 (0.94%) | 0 (0.00%) | 1 (0.94%) |
|  Methylergonovine | 4 (3.77%) | 0 (0.00%) | 3 (2.83%) |
|  Methysergide | 1 (0.94%) | 2 (1.94%) | 0 (0.00%) |
|  Metoprolol | 7 (6.60%) | 0 (0.00%) | 1 (0.94%) |
|  Milnacipran | 1 (0.94%) | 1 (0.97%) | 0 (0.00%) |
|  Nadolol | 0 (0.00%) | 2 (1.94%) | 0 (0.00%) |
|  Nebivolol | 1 (0.94%) | 1 (0.97%) | 2 (1.89%) |
|  Nimodipine | 1 (0.94%) | 1 (0.97%) | 0 (0.00%) |
|  Nortriptyline | 1 (0.94%) | 2 (1.94%) | 2 (1.89%) |
|  OnabotulinumtoxinA | 0 (0.00%) | 2 (1.94%) | 3 (2.83%) |
|  Oxetorone | 1 (0.94%) | 1 (0.97%) | 3 (2.83%) |
|  Paroxetine | 2 (1.89%) | 4 (3.88%) | 2 (1.89%) |
|  Pindolol | 1 (0.94%) | 2 (1.94%) | 1 (0.94%) |
|  Pizotifen | 0 (0.00%) | 0 (0.00%) | 1 (0.94%) |
|  Pregabalin | 4 (3.77%) | 3 (2.91%) | 2 (1.89%) |
|  Propranolol | 7 (6.60%) | 1 (0.97%) | 6 (5.66%) |
|  Protriptyline | 0 (0.00%) | 1 (0.97%) | 3 (2.83%) |
|  Sertraline | 0 (0.00%) | 3 (2.91%) | 6 (5.66%) |
|  Timolol | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Topiramate | 5 (4.72%) | 2 (1.94%) | 6 (5.66%) |
|  Valproate | 7 (6.60%) | 0 (0.00%) | 5 (4.72%) |
|  Venlafaxine | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Verapamil | 0 (0.00%) | 2 (1.94%) | 4 (3.77%) |
|  Zonisamide | 0 (0.00%) | 0 (0.00%) | 1 (0.94%) |
|  Other  | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |

Abbreviations: ER/A&E = emergency room/accident & emergency; NSAID = nonsteroidal anti-inflammatory drug.

a There was one chart with missing information on treatment used at the time of migraine-related ER/A&E visits, four charts with missing information on treatment administered during migraine-related ER/A&E visits, and one chart with missing information on treatment prescribed upon discharge from ER/A&E.

**Supplemental Table 6. Pharmacologic migraine treatments in Spaina**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Used at the time of the ER/A&E visit****N=111** | **Administered during the ER/A&E visit****N=118** | **Prescribed upon discharge from ER/A&E****N=119** |
|  **Acute migraine treatments, n (%)** |   |   |   |
|  Barbiturates | 0 (0.00%) | 0 (0.00%) | 2 (1.68%) |
|  COX inhibitors/NSAIDs | 67 (60.36%) | 65 (55.08%) | 47 (39.50%) |
|  Ergotamines | 11 (9.91%) | 10 (8.47%) | 12 (10.08%) |
|  Muscle Relaxants | 20 (18.02%) | 68 (57.63%) | 39 (32.77%) |
|  Neuroleptics | 4 (3.60%) | 22 (18.64%) | 10 (8.40%) |
|  Opioids | 10 (9.01%) | 30 (25.42%) | 13 (10.92%) |
|  Triptans | 22 (19.82%) | 27 (22.88%) | 45 (37.82%) |
|  Other  | 30 (27.03%) | 40 (33.90%) | 30 (25.21%) |
|  **Prophylactic migraine treatments, n (%)** |   |   |   |
|  Amitriptyline | 16 (14.41%) | 5 (4.24%) | 11 (9.24%) |
|  Atenolol | 2 (1.80%) | 2 (1.69%) | 1 (0.84%) |
|  Bisoprolol | 5 (4.50%) | 2 (1.69%) | 4 (3.36%) |
|  Candesartan | 0 (0.00%) | 0 (0.00%) | 1 (0.84%) |
|  Carbamazepine | 1 (0.90%) | 2 (1.69%) | 4 (3.36%) |
|  Desipramine | 3 (2.70%) | 0 (0.00%) | 0 (0.00%) |
|  Desvenlafaxine | 1 (0.90%) | 0 (0.00%) | 2 (1.68%) |
|  Diltazem | 1 (0.90%) | 1 (0.85%) | 3 (2.52%) |
|  Divalproex | 0 (0.00%) | 1 (0.85%) | 0 (0.00%) |
|  Doxepin | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Duloxetine | 2 (1.80%) | 0 (0.00%) | 4 (3.36%) |
|  Flunarizine | 9 (8.11%) | 1 (0.85%) | 4 (3.36%) |
|  Fluoxetine | 3 (2.70%) | 1 (0.85%) | 3 (2.52%) |
|  Gabapentin | 4 (3.60%) | 0 (0.00%) | 2 (1.68%) |
|  Imipramine | 1 (0.90%) | 3 (2.54%) | 1 (0.84%) |
|  Lisinopril | 1 (0.90%) | 0 (0.00%) | 1 (0.84%) |
|  Methylergonovine | 5 (4.50%) | 0 (0.00%) | 1 (0.84%) |
|  Methysergide | 0 (0.00%) | 1 (0.85%) | 3 (2.52%) |
|  Metoprolol | 2 (1.80%) | 0 (0.00%) | 0 (0.00%) |
|  Milnacipran | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Nadolol | 2 (1.80%) | 0 (0.00%) | 1 (0.84%) |
|  Nebivolol | 1 (0.90%) | 0 (0.00%) | 1 (0.84%) |
|  Nimodipine | 2 (1.80%) | 1 (0.85%) | 1 (0.84%) |
|  Nortriptyline | 0 (0.00%) | 1 (0.85%) | 0 (0.00%) |
|  OnabotulinumtoxinA | 0 (0.00%) | 0 (0.00%) | 1 (0.84%) |
|  Oxetorone | 1 (0.90%) | 0 (0.00%) | 0 (0.00%) |
|  Paroxetine | 3 (2.70%) | 1 (0.85%) | 3 (2.52%) |
|  Pindolol | 0 (0.00%) | 1 (0.85%) | 1 (0.84%) |
|  Pizotifen | 0 (0.00%) | 0 (0.00%) | 1 (0.84%) |
|  Pregabalin | 2 (1.80%) | 1 (0.85%) | 6 (5.04%) |
|  Propranolol | 13 (11.71%) | 3 (2.54%) | 7 (5.88%) |
|  Protriptyline | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Sertraline | 2 (1.80%) | 0 (0.00%) | 1 (0.84%) |
|  Timolol | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) |
|  Topiramate | 8 (7.21%) | 3 (2.54%) | 5 (4.20%) |
|  Valproate | 1 (0.90%) | 0 (0.00%) | 1 (0.84%) |
|  Venlafaxine | 1 (0.90%) | 0 (0.00%) | 6 (5.04%) |
|  Verapamil | 1 (0.90%) | 1 (0.85%) | 2 (1.68%) |
|  Zonisamide | 1 (0.90%) | 0 (0.00%) | 0 (0.00%) |
|  Other  | 1 (0.90%) | 1 (0.85%) | 1 (0.83%) |

 Abbreviations: ER/A&E = emergency room/accident & emergency; NSAID = nonsteroidal anti-inflammatory drug.

a There were nine charts with missing information on treatment used at the time of migraine-related ER/A&E visits, two charts with missing information on treatment administered during migraine-related ER/A&E visits, and one chart with missing information on treatment prescribed upon discharge from ER/A&E.

**Supplemental Table 7**. **Resource use during the ER/A&E visit**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **FRANCE** | **GERMANY** | **ITALY** | **SPAIN** |
|  | **N = 120** | **N = 120** | **N = 107** | **N = 120** |
| **Length of ER/A&E visit, mean ± SD** |   |   |   |   |
|  Hours the patient spent in the ER/A&E prior to discharge or hospital admission | 8.58 ± 6.29 | 5.42 ± 5.70 | 10.27 ± 12.65 | 7.52 ± 8.43 |
| **Procedures used for migraine during the ER/A&E visit, n (%)** |   |   |   |   |
|  Blood tests | 87 (72.50%) | 108 (90.00%) | 95 (88.79%) | 92 (76.67%) |
|  Cranial CT scan | 63 (52.50%) | 43 (35.83%) | 68 (63.55%) | 40 (33.33%) |
|  EKG | 69 (57.50%) | 95 (79.17%) | 71 (66.36%) | 56 (46.67%) |
|  EEG | 10 (8.33%) | 35 (29.17%) | 42 (39.25%) | 3 (2.50%) |
|  Fundoscopy | 21 (17.50%) | 19 (15.83%) | 43 (40.19%) | 48 (40.00%) |
|  Lumbar puncture / spinal tap | 8 (6.67%) | 14 (11.67%) | 4 (3.74%) | 15 (12.50%) |
|  Cranial and/or cranio-cervical MRI scan | 19 (15.83%) | 17 (14.17%) | 14 (13.08%) | 8 (6.67%) |
|  Urinalysis | 26 (21.67%) | 62 (51.67%) | 41 (38.32%) | 47 (39.17%) |
|  X-Ray | 17 (14.17%) | 29 (24.17%) | 29 (27.10%) | 33 (27.50%) |
|  Other | 0 (0.00%) | 7 (5.83%) | 1 (0.93%) | 9 (7.50%) |
| **Hospital admission during the ER/A&E visit** |   |   |   |   |
|  Patient admitted to hospital due to migraine during the ER/A&E visit, n (%) | 45 (37.50%) | 27 (22.50%) | 17 (15.89%) | 10 (8.33%) |
|  Number of days patient spent in the hospital due to migraine,mean ± SD | 2.93 ± 2.16 | 2.74 ± 1.51 | 4.57 ± 2.17 | 5.63 ± 5.88 |
| **Patient referred to a neurologist or headache specialist during the ER/A&E visit, n (%)** | 69 (57.50%) | 60 (50.00%) | 86 (80.37%) | 58 (48.33%) |

Abbreviations: CT = computed tomography; EEG = electroencephalogram; EKG = electrocardiogram; ER/A&E = emergency room/accident & emergency; MRI = magnetic resonance imaging; SD = standard deviation.