

### Transcranial magnetic stimulation (TMS) – a questionnaire survey

The purpose of this survey is to assess doctors' familiarity with and interest in transcranial magnetic stimulation (TMS) as a treatment for psychiatric disorders in adults. Doctors' interest in TMS is crucial for its implementation in clinical practice.

TMS is rarely used to treat psychiatric disorders in Norway. The method is internationally recognised, approved by the EU, and therapeutic use by health trusts is reimbursed by the Norwegian Health Economics Administration (Helfo). However, Norwegian health authorities have not provided updated clinical guidelines.

The study is being conducted anonymously. Respondents' IP addresses will not be stored. We cannot trace your answers back to you. The questionnaire takes approximately 10 minutes to complete. By answering the survey, you consent to your responses being used for research purposes.

| <b>Familiarity with TMS (1-5 strongly disagree, disagree, neither agree nor disagree, agree, strongly agree)</b> |                   |             |                            |             |                |
|--|-------------------|-------------|----------------------------|-------------|----------------|
|  | Strongly disagree | Disagree    | Neither agree nor disagree | Agree       | Strongly agree |
| I am not familiar with TMS (N = 481)   | 87 (18.1%)        | 116 (24.1%) | 42 (8.7%)                  | 103 (21.4%) | 133 (27.7%)    |
| I have studied the theory behind TMS (N = 473)   | 312 (66%)         | 50 (10.6%)  | 21 (4.4%)                  | 56 (11.8%)  | 32 (7.2%)      |
| I am familiar with various TMS techniques (N = 470)  | 313 (66.6%)       | 62 (13.2%)  | 24 (5%)                    | 48 (10%)    | 23 (4.8%)      |
| I know the indications for using TMS to treat depression (N = 472)   | 182 (38.6%)       | 91 (19.3%)  | 28 (5.9%)                  | 120 (25.4%) | 51 (10.8%)     |
| I know how to draw up a treatment plan for TMS in patients with depression (N = 472)                             | 374 (79.2%)       | 44 (9.3%)   | 17 (3.6%)                  | 23 (4.9%)   | 14 (3%)        |
| I am familiar with the normal adverse effects of TMS (N = 470)   | 269 (57.2%)       | 71 (15.1%)  | 34 (7.2%)                  | 68 (14.5%)  | 28 (6%)        |
| <b>Experience with TMS and neuromodulation</b>   |                   |             |                            |             |                |
|  | Yes               |             | No                         |             | Don't know     |

|   |                   |            |                            |             |                |
|---|-------------------|------------|----------------------------|-------------|----------------|
| There is TMS equipment at my workplace (N = 474)  | 37 (7.8%)         |            | 381 (80.4%)                |             | 56 (11.8%)     |
| My health trust offers TMS (N = 472)  | 104 (22%)         |            | 134 (28.4%)                |             | 234 (49.6%)    |
| I have administered TMS to patients (N = 473)   | 9 (1.9%)          |            | 456 (96.4%)                |             | 8 (1.7%)       |
| I have referred patients for TMS (N = 473)  | 58 (12.3%)        |            | 411 (86.9%)                |             | 8 (1.7%)       |
| I often refer patients for ECT (N = 474)  | 181 (38.2%)       |            | 287 (60.5%)                |             | 6 (1.3%)       |
| <b>Statements about TMS</b>   |                   |            |                            |             |                |
|   | Strongly disagree | Disagree   | Neither agree nor disagree | Agree       | Strongly agree |
| I would refer suitable patients for TMS if it was available in my health trust (N = 368)                        | 13 (3.5%)         | 17 (4.6%)  | 142 (38.6%)                | 104 (28.3%) | 92 (25%)       |
| I would treat suitable patients with TMS if I had access to the equipment (N = 367)                             | 37 (10.1%)        | 35 (9.5%)  | 172 (46.9%)                | 67 (18.3%)  | 56 (15.3%)     |
| I would personally want to be treated with TMS if medications did not help with my depression (N = 369)         | 37 (10%)          | 27 (7.3%)  | 211 (57.2%)                | 54 (14.6%)  | 40 (10.8%)     |
| I want to learn more about TMS (N = 376)  | 6 (1.6%)          | 4 (1.1%)   | 59 (15.7%)                 | 86 (22.9%)  | 221 (58.8%)    |
| I want to be trained in administering TMS (N = 371)   | 33 (8.9%)         | 29 (7.8%)  | 128 (34.5%)                | 76 (20.5%)  | 105 (28.3%)    |
| TMS should be a standard treatment option for patients with depression in all health trusts in Norway (N = 369) | 26 (7%)           | 20 (5.4%)  | 208 (56.4%)                | 68 (18.4%)  | 47 (12.7%)     |
| TMS should be first-line treatment for moderate depression (N = 366)  | 60 (16.4%)        | 62 (16.9%) | 220 (60.1%)                | 21 (5.7%)   | 3 (0.8%)       |
| TMS should be first-line treatment for obsessive-compulsive disorder (OCD) (N = 366)                            | 83 (22.7%)        | 38 (10.4%) | 232 (63.4%)                | 11 (3%)     | 2 (0.5%)       |

| <b>I think the reasons for limited use of TMS in mental health care in Norway are as follows:</b> |                   |            |                            |             |                |
|---|-------------------|------------|----------------------------|-------------|----------------|
|   | Strongly disagree | Disagree   | Neither agree nor disagree | Agree       | Strongly agree |
| Lack of awareness of the modality (N = 385)   | 5 (1.3%)          | 8 (2.1%)   | 38 (9.9%)                  | 98 (25.5%)  | 236 (61.3%)    |
| Insufficient training of doctors (N = 383)  | 7 (1.8%)          | 4 (1%)     | 51 (13.3%)                 | 77 (20.1%)  | 244 (63.7%)    |
| Not enough evidence-based knowledge about TMS (N = 376)   | 13 (3.5%)         | 30 (8%)    | 230 (61.2%)                | 60 (16%)    | 43 (11.4%)     |
| Not enough is known about which patients benefit from TMS (N = 380)                               | 7 (1.8%)          | 19 (5%)    | 139 (36.6%)                | 106 (27.9%) | 109 (28.7%)    |
| TMS outcomes are primarily a placebo effect (N = 379)   | 61 (16.1%)        | 60 (15.8%) | 232 (61.2%)                | 18 (4.7%)   | 8 (2.1%)       |
| TMS is too high risk for patients (N = 377)   | 105 (27.9%)       | 82 (21.8%) | 177 (46.9%)                | 11 (2.9%)   | 2 (0.5%)       |
| TMS has too many adverse effects (N = 378)  | 87 (23%)          | 92 (24.3%) | 189 (50%)                  | 7 (1.9%)    | 3 (0.8%)       |
| Not enough is known about the mechanisms of action (N = 378)                                      | 12 (3.2%)         | 38 (10.1%) | 225 (59.5%)                | 77 (20.4%)  | 26 (6.9%)      |
| TMS has no long-term effect (N = 375)   | 11 (2.9%)         | 31 (8.3%)  | 274 (73.1%)                | 47 (12.5%)  | 12 (3.2%)      |
| TMS is too time-consuming for patients (N = 374)  | 27 (7.2%)         | 59 (15.8%) | 230 (61.5%)                | 43 (11.5%)  | 15 (4%)        |
| TMS is too time-consuming for practitioners (N = 376)   | 33 (8.8%)         | 61 (16.2%) | 233 (62%)                  | 38 (10.1%)  | 11 (2.9%)      |
| Purchasing and operating TMS equipment is too costly (N = 376)                                    | 15 (4%)           | 24 (6.4%)  | 266 (70.7%)                | 49 (13%)    | 22 (5.9%)      |
| Learning how to administer TMS is difficult (N = 377)   | 42 (11.1%)        | 54 (14.3%) | 263 (69.8%)                | 14 (3.7%)   | 4 (1.1%)       |
| <b>What is needed to increase use of TMS in Norway?:</b>  |                   |            |                            |             |                |
|   | Strongly disagree | Disagree   | Neither agree nor disagree | Agree       | Strongly agree |
| Updated national clinical guidelines (N = 368)  | 9 (2.4%)          | 9 (2.4%)   | 56 (15.2%)                 | 102 (27.7%) | 192 (52.2%)    |

|  |                     |                         |            |             |             |                            |
|--|---------------------|-------------------------|------------|-------------|-------------|----------------------------|
| Requests from patients/patient association for use of TMS (N = 366)                                  |                     | 17 (4.6%)               | 34 (9.3%)  | 128 (35%)   | 107 (29.2%) | 80 (21.9%)                 |
| Training of more doctors in TMS (N = 371)  |                     | 4 (1.1%)                | 2 (0.5%)   | 66 (17.8%)  | 98 (26.4%)  | 201 (54.2%)                |
| International research showing that TMS is much more effective than standard treatment (N = 370)     |                     | 9 (2.4%)                | 17 (4.6%)  | 136 (36.8%) | 97 (26.2%)  | 111 (30%)                  |
| More international research is needed before the modality can be used in clinical practice (N = 368) |                     | 22 (6%)                 | 40 (10.9%) | 173 (47%)   | 72 (19.6%)  | 61 (16.6%)                 |
| More national research is needed before the modality can be used in clinical practice (N = 369)      |                     | 22 (6%)                 | 50 (13.6%) | 159 (43.1%) | 73 (19.8%)  | 65 (17.6%)                 |
| <b>I learned about TMS as follows (N = 414):</b>   |                     |                         |            |             |             |                            |
| Medical school   | Specialist training | Courses and conferences | Colleagues | Self-taught | Other       | Have not learned about TMS |
| 4 (1%)   | 32 (7.7%)           | 68 (16.4%)              | 70 (16.9%) | 95 (22.9%)  | 19 (4.6%)   | 126 (30.4%)                |