|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | ID | Duration (ms)  Before sleep deprivation | | | | Duration (ms)  After sleep deprivation | | | |
| Microstate A | Microstate B | Microstate C | Microstate D | Microstate A | Microstate B | Microstate C | Microstate D |
| 1 | 001 | 65.95358 | 56.73841 | 53.02937 | 80.87075 | 67.46597 | 57.05937 | 58.86137 | 77.89145 |
| 2 | 002 | 83.44261 | 56.88477 | 67.11876 | 76.49345 | 63.94344 | 59.84262 | 78.17869 | 83.97014 |
| 3 | 003 | 66.62077 | 79.58877 | 67.35964 | 68.23057 | 59.46155 | 82.40037 | 61.11406 | 77.64275 |
| 4 | 004 | 80.91935 | 59.67848 | 62.94414 | 89.15792 | 73.27407 | 61.35387 | 63.50069 | 79.54728 |
| 5 | 007 | 70.09929 | 72.46425 | 77.22612 | 74.50388 | 68.36278 | 74.1066 | 87.55336 | 72.68142 |
| 6 | 008 | 62.49263 | 82.05635 | 60.07653 | 87.19639 | 64.79874 | 72.68432 | 65.3238 | 78.37984 |
| 7 | 013 | 68.59077 | 61.79662 | 51.75597 | 64.55128 | 59.03362 | 53.38542 | 50.60447 | 53.88253 |
| 8 | 014 | 89.64039 | 76.9746 | 61.0167 | 72.37441 | 80.92371 | 75.05979 | 61.56544 | 67.93797 |
| 9 | 017 | 86.46422 | 67.19328 | 62.67449 | 94.28321 | 71.09148 | 64.62727 | 74.93471 | 88.4869 |
| 10 | 018 | 63.97033 | 58.68022 | 56.67229 | 67.49197 | 66.83746 | 58.66071 | 60.60447 | 72.98929 |
| 11 | 019 | 69.89538 | 63.18327 | 54.77596 | 70.76261 | 67.39578 | 60.09549 | 64.76747 | 71.76069 |
| 12 | 021 | 82.05621 | 67.75682 | 61.68917 | 122.1611 | 76.80243 | 65.06431 | 60.04512 | 116.1991 |
| 13 | 022 | 61.50429 | 60.50004 | 63.9122 | 70.13331 | 73.1386 | 63.74004 | 61.79001 | 82.67025 |
| 14 | 024 | 60.99301 | 50.70466 | 53.72547 | 91.88614 | 73.23899 | 60.01937 | 56.28107 | 81.43697 |
| 15 | 025 | 63.56663 | 69.50339 | 59.5857 | 96.97155 | 60.13569 | 59.05203 | 66.25536 | 83.52949 |
| 16 | 027 | 71.42932 | 67.44988 | 61.80007 | 95.39897 | 67.71305 | 64.71521 | 63.82989 | 94.38964 |
| 17 | 028 | 58.96577 | 71.05094 | 58.66075 | 59.92034 | 55.95113 | 64.59598 | 63.94624 | 67.13352 |
| 18 | 031 | 82.82076 | 73.67015 | 66.12833 | 70.40196 | 73.63114 | 65.1175 | 64.13276 | 78.14699 |
| 19 | 033 | 65.33273 | 57.54836 | 66.10508 | 114.0585 | 64.79253 | 61.14642 | 69.81617 | 73.8878 |
| 20 | 034 | 67.85653 | 62.493 | 76.71385 | 91.67148 | 72.42868 | 65.10535 | 65.36019 | 94.55304 |
| 21 | 037 | 70.04575 | 63.0377 | 66.07994 | 72.62841 | 65.68753 | 62.17925 | 66.09564 | 59.0955 |
| 22 | 039 | 81.55124 | 70.38082 | 68.47468 | 97.0181 | 78.05402 | 67.2664 | 67.81958 | 91.28544 |
| 23 | 052 | 55.05132 | 68.23851 | 63.02327 | 130.3955 | 62.3314 | 58.26364 | 63.16319 | 70.34697 |
| 24 | 053 | 52.193 | 54.19461 | 52.1642 | 60.50363 | 48.59872 | 52.21977 | 56.80799 | 70.11165 |

Data Table 1: Results of microstate analysis, mean duration of 24 subjects, as generated by QEEG Pro software

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | ID | Occurrence (Hz)  Before sleep deprivation | | | | Occurrence (Hz)  After sleep deprivation | | | |
| Microstate A | Microstate B | Microstate C | Microstate D | Microstate A | Microstate B | Microstate C | Microstate D |
| 1 | 001 | 4.070043 | 3.004757 | 3.338167 | 4.749061 | 4.132853 | 2.946237 | 3.753858 | 4.263696 |
| 2 | 002 | 4.071199 | 2.071564 | 3.351906 | 4.150321 | 3.019663 | 2.622505 | 3.668986 | 4.324612 |
| 3 | 003 | 3.165985 | 3.679497 | 3.578412 | 3.740148 | 2.997222 | 3.789991 | 2.969406 | 4.224623 |
| 4 | 004 | 3.896387 | 2.490114 | 2.750391 | 4.0712 | 3.6731 | 2.762598 | 3.415495 | 4.330439 |
| 5 | 007 | 3.287556 | 3.402909 | 3.383683 | 3.511853 | 2.703852 | 3.369197 | 3.661761 | 3.369197 |
| 6 | 008 | 2.650104 | 3.890152 | 2.450096 | 4.220165 | 3.004395 | 3.441248 | 3.420642 | 4.232529 |
| 7 | 013 | 4.306298 | 3.777881 | 3.225168 | 4.71324 | 4.770396 | 3.790641 | 4.628501 | 5.229868 |
| 8 | 014 | 3.937739 | 3.262942 | 2.485644 | 3.373984 | 4.10291 | 3.413287 | 2.591312 | 3.71282 |
| 9 | 017 | 3.812725 | 3.006828 | 1.928594 | 3.684893 | 3.361468 | 2.798777 | 3.483792 | 3.606116 |
| 10 | 018 | 4.347855 | 3.625538 | 3.444087 | 4.651437 | 3.918285 | 3.238252 | 3.451051 | 4.644578 |
| 11 | 019 | 4.089249 | 3.575881 | 3.257238 | 4.378388 | 3.540705 | 3.525038 | 3.650373 | 4.363214 |
| 12 | 021 | 3.256508 | 2.444982 | 1.9924 | 3.63626 | 3.208367 | 2.580738 | 2.067224 | 3.972054 |
| 13 | 022 | 3.602181 | 3.465074 | 3.930408 | 4.528694 | 3.679664 | 2.823223 | 2.887645 | 4.505788 |
| 14 | 024 | 3.50886 | 2.614171 | 3.443622 | 5.097866 | 3.840913 | 3.030753 | 2.850251 | 4.621689 |
| 15 | 025 | 2.882055 | 3.434493 | 2.975865 | 4.132857 | 3.035806 | 3.010577 | 3.918796 | 4.549504 |
| 16 | 027 | 3.457703 | 2.770804 | 2.719751 | 4.17245 | 3.244772 | 2.453173 | 3.119371 | 4.475278 |
| 17 | 028 | 3.081645 | 4.869266 | 3.888743 | 4.075509 | 3.327714 | 4.095289 | 3.931477 | 4.436953 |
| 18 | 031 | 4.264016 | 3.651479 | 2.402664 | 3.110167 | 4.168007 | 2.83371 | 3.101462 | 3.962731 |
| 19 | 033 | 3.157829 | 2.385411 | 2.976084 | 4.030208 | 3.556686 | 3.134769 | 3.815758 | 4.215469 |
| 20 | 034 | 2.865084 | 2.50976 | 3.517262 | 4.133457 | 3.001351 | 3.001351 | 2.90875 | 4.199713 |
| 21 | 037 | 3.771832 | 3.23487 | 3.605941 | 4.042496 | 3.682765 | 3.659795 | 4.429271 | 4.023478 |
| 22 | 039 | 3.393871 | 2.329691 | 2.679624 | 3.873232 | 3.533577 | 2.502087 | 2.787922 | 4.018253 |
| 23 | 052 | 1.54486 | 3.059429 | 2.430883 | 4.240793 | 3.317495 | 2.815244 | 4.956416 | 4.493817 |
| 24 | 053 | 4.474365 | 4.045055 | 4.493446 | 5.170802 | 3.493663 | 3.769782 | 4.475417 | 5.407316 |

Data Table 2: Results of microstate analysis, occurrence of 24 subjects, as generated by QEEG Pro software

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | ID | Coverage (%)  Before sleep deprivation | | | | Coverage (%)  After sleep deprivation | | | |
| Microstate A | Microstate B | Microstate C | Microstate D | Microstate A | Microstate B | Microstate C | Microstate D |
| 1 | 001 | 26.84339 | 17.04851 | 17.70209 | 38.40601 | 27.88269 | 16.81104 | 22.09572 | 33.21055 |
| 2 | 002 | 33.97114 | 11.78404 | 22.49758 | 31.74724 | 19.30877 | 15.69376 | 28.68365 | 36.31383 |
| 3 | 003 | 21.09203 | 29.28467 | 24.10405 | 25.51925 | 17.82195 | 31.22967 | 18.14725 | 32.80114 |
| 4 | 004 | 31.52931 | 14.86062 | 17.3121 | 36.29797 | 26.9143 | 16.94961 | 21.68863 | 34.44746 |
| 5 | 007 | 23.04554 | 24.65892 | 26.13087 | 26.16467 | 18.48428 | 24.96797 | 32.05994 | 24.4878 |
| 6 | 008 | 16.56119 | 31.92117 | 14.71932 | 36.79831 | 19.4681 | 25.01248 | 22.34493 | 33.17449 |
| 7 | 013 | 29.53723 | 23.34603 | 16.69217 | 30.42457 | 28.16137 | 20.23649 | 23.42228 | 28.17985 |
| 8 | 014 | 35.29804 | 25.11636 | 15.16658 | 24.41901 | 33.20227 | 25.62006 | 15.95352 | 25.22415 |
| 9 | 017 | 32.96642 | 20.20386 | 12.08736 | 34.74235 | 23.89717 | 18.08773 | 26.1057 | 31.9094 |
| 10 | 018 | 27.81337 | 21.27474 | 19.51843 | 31.39346 | 26.18882 | 18.99582 | 20.91491 | 33.90045 |
| 11 | 019 | 28.58197 | 22.59358 | 17.84183 | 30.98262 | 23.86285 | 21.18389 | 23.64254 | 31.31072 |
| 12 | 021 | 26.72167 | 16.56642 | 12.29095 | 44.42096 | 24.64104 | 16.79139 | 12.41267 | 46.1549 |
| 13 | 022 | 22.15496 | 20.96371 | 25.1201 | 31.76123 | 26.91254 | 17.99523 | 17.84276 | 37.24946 |
| 14 | 024 | 21.40159 | 13.25506 | 18.50102 | 46.84232 | 28.13046 | 18.19039 | 16.04152 | 37.63764 |
| 15 | 025 | 18.32025 | 23.87089 | 17.7319 | 40.07695 | 18.25603 | 17.77807 | 25.96413 | 38.00177 |
| 16 | 027 | 24.69814 | 18.68904 | 16.80808 | 39.80474 | 21.97134 | 15.87576 | 19.91091 | 42.24199 |
| 17 | 028 | 18.17116 | 34.59659 | 22.81166 | 24.42059 | 18.61894 | 26.45392 | 25.14032 | 29.78683 |
| 18 | 031 | 35.3149 | 26.9005 | 15.88841 | 21.89619 | 30.68951 | 18.45241 | 19.89053 | 30.96755 |
| 19 | 033 | 20.63096 | 13.72765 | 19.67343 | 45.96796 | 23.04467 | 19.16799 | 26.64016 | 31.14717 |
| 20 | 034 | 19.44147 | 15.68424 | 26.98227 | 37.89202 | 21.73839 | 19.5404 | 19.01165 | 39.70956 |
| 21 | 037 | 26.42008 | 20.39188 | 23.82804 | 29.36 | 24.19117 | 22.75633 | 29.27555 | 23.77695 |
| 22 | 039 | 27.67744 | 16.39656 | 18.34864 | 37.57736 | 27.58099 | 16.83064 | 18.90757 | 36.6808 |
| 23 | 052 | 8.504659 | 20.87709 | 15.32022 | 55.29803 | 20.67841 | 16.40264 | 31.30631 | 31.61264 |
| 24 | 053 | 23.35305 | 21.92202 | 23.4397 | 31.28523 | 16.97876 | 19.68571 | 25.42394 | 37.91159 |

Data Table 3: Results of microstate analysis, coverage of 24 subjects, as generated by QEEG Pro software

|  |  |  |  |
| --- | --- | --- | --- |
| No | ID | Explained Variance  (Before sleep deprivation) | Explained Variance  (After sleep deprivation) |
| 1 | 001 | 0.695458515 | 0.679429047 |
| 2 | 002 | 0.704792206 | 0.690921887 |
| 3 | 003 | 0.70475874 | 0.720812803 |
| 4 | 004 | 0.750207461 | 0.710584236 |
| 5 | 007 | 0.671787891 | 0.742951949 |
| 6 | 008 | 0.714303914 | 0.684888574 |
| 7 | 013 | 0.636702817 | 0.581659684 |
| 8 | 014 | 0.633630212 | 0.628436252 |
| 9 | 017 | 0.749372026 | 0.726424896 |
| 10 | 018 | 0.658459147 | 0.644814153 |
| 11 | 019 | 0.711626473 | 0.690665949 |
| 12 | 021 | 0.682637642 | 0.698052525 |
| 13 | 022 | 0.713474161 | 0.755064485 |
| 14 | 024 | 0.634761198 | 0.692519239 |
| 15 | 025 | 0.670732809 | 0.65114922 |
| 16 | 027 | 0.798306781 | 0.811856074 |
| 17 | 028 | 0.633055645 | 0.669187439 |
| 18 | 031 | 0.669079085 | 0.688519069 |
| 19 | 033 | 0.750251691 | 0.6407402 |
| 20 | 034 | 0.646947003 | 0.703117681 |
| 21 | 037 | 0.672694559 | 0.616892779 |
| 22 | 039 | 0.712731485 | 0.713926119 |
| 23 | 052 | 0.731293128 | 0.636116074 |
| 24 | 053 | 0.605647491 | 0.621939923 |

Data Table 4: Results of microstate analysis, Global Explained Variance of 24 subjects, as generated by QEEG Pro software

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Subject ID** | **Before Sleep Deprivation** | **After Sleep Deprivation** |
| 1 | ID001 | 2 | 8 |
| 2 | ID002 | 2 | 9 |
| 3 | ID003 | 2 | 8 |
| 4 | ID004 | 1 | 9 |
| 5 | ID007 | 1 | 3 |
| 6 | ID008 | 1 | 8 |
| 7 | ID013 | 6 | 9 |
| 8 | ID014 | 1 | 8 |
| 9 | ID015 | 1 | 8 |
| 10 | ID017 | 1 | 8 |
| 11 | ID019 | 2 | 7 |
| 12 | ID021 | 1 | 3 |
| 13 | ID022 | 1 | 8 |
| 14 | ID024 | 2 | 9 |
| 15 | ID025 | 2 | 9 |
| 16 | ID027 | 1 | 8 |
| 17 | ID028 | 1 | 8 |
| 18 | ID031 | 2 | 9 |
| 19 | ID033 | 2 | 9 |
| 20 | ID034 | 2 | 8 |
| 21 | ID037 | 1 | 8 |
| 22 | ID039 | 1 | 9 |
| 23 | ID052 | 1 | 8 |
| 24 | ID053 | 2 | 8 |

Data Table 5: Score of 24 subjects on Malay language Karolinska Sleepiness Scale (KSS-MAS)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **ID** | **Age** | **Gender** | **Ethnic** |
| 1 | ID001 | 24 | F | Malay |
| 2 | ID002 | 23 | F | Malay |
| 3 | ID003 | 28 | F | Iban |
| 4 | ID004 | 34 | M | Bidayuh |
| 5 | ID007 | 24 | M | Malay |
| 6 | ID008 | 34 | M | Malay |
| 7 | ID013 | 25 | F | Malay |
| 8 | ID014 | 25 | F | Chinese |
| 9 | ID017 | 24 | M | Iban |
| 10 | ID018 | 26 | F | Iban |
| 11 | ID019 | 31 | F | Bidayuh |
| 12 | ID021 | 33 | M | Malay |
| 13 | ID022 | 38 | F | Chinese |
| 14 | ID024 | 40 | F | Malay |
| 15 | ID025 | 31 | F | Chinese |
| 16 | ID027 | 38 | F | Malay |
| 17 | ID028 | 31 | F | Malay |
| 18 | ID031 | 28 | M | Malay |
| 19 | ID033 | 25 | F | Malay |
| 20 | ID034 | 24 | F | Malay |
| 21 | ID037 | 39 | M | Malay |
| 22 | ID039 | 38 | M | Malay |
| 23 | ID052 | 29 | F | Malay |
| 24 | ID053 | 27 | F | Bidayuh |

Data Table 6: Demographic of 24 subjects included in EEG microstate analysis