

## Supplementary Materials

# Associations between vitamin D insufficiency, health beliefs, and quality of life in metabolic syndrome: A northeastern Taiwanese community study

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**Supplementary Table 1.** Sociodemographic variables, HBM and HRQoL of the study participants stratified by sex

| Variables, expressed as mean±SD or number (%) | Overall               | Women                 | Men                   | <i>p</i> * |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|------------|
| Patient number                                | 1015 (100)            | 638 (62.9)            | 377 (37.1)            |            |
| Age                                           | 59.5±10.0             | 58.9±9.76             | 60.6±10.2             | 0.008      |
| <65: ≥65                                      | 750 (73.9):265 (26.1) | 495 (77.6):143 (22.4) | 255 (67.6):122 (32.4) | <0.001     |
| Educational attainment                        |                       |                       |                       | <0.001     |
| High school                                   | 797 (78.6)            | 529(82.9)             | 268 (71.1)            |            |
| College and above                             | 218(21.4)             | 109(17.1)             | 109 (28.9)            |            |
| Diet (vegetarian: non-vegetarian)             | 31(3.1):984(96.9)     | 22(3.4):616(96.6)     | 9(2.4):368(97.6)      | 0.343      |
| Smoking (yes)                                 | 187(18.4)             | 23(3.6)               | 164(43.5)             | <0.001     |
| Drinking (yes)                                | 409(40.3)             | 193(30.3)             | 216(57.3)             | <0.001     |
| Betel nut usage (yes)                         | 47(4.6)               | 1(0.2)                | 46(12.2)              | <0.001     |
| Serum 25 (OH) D level (ng/mL)                 | 29.6±11.0             | 27.22±9.61            | 33.7±12.0             | <0.001     |
| VitD insufficiency (%)                        | 558(55.0)             | 409(64.1)             | 149(39.5)             | <0.001     |
| HBM                                           |                       |                       |                       |            |
| Perceived susceptibility                      | 26.3±5.32             | 26.4±5.46             | 26.3±5.08             | 0.728      |
| Perceived severity                            | 28.7±5.52             | 29.0±5.43             | 28.3±5.65             | 0.063      |
| Perceived benefits                            | 44.3±5.49             | 44.5±5.25             | 43.9±5.88             | 0.100      |
| Perceived barriers                            | 31.1±14.9             | 29.4±15.1             | 33.9±14.2             | <0.001     |
| Self-efficacy                                 | 65.3±9.73             | 66.2±9.69             | 63.8±9.62             | <0.001     |
| Cue to action                                 | 35.8±5.10             | 35.9±5.12             | 35.4±5.07             | 0.114      |
| HRQoL                                         |                       |                       |                       |            |
| PF                                            | 52.5±6.75             | 52.2±6.57             | 52.9±7.04             | 0.096      |
| RP                                            | 51.4±9.76             | 51.1±9.88             | 51.7±9.56             | 0.363      |
| BP                                            | 54.3±9.24             | 53.6±9.17             | 55.6±9.22             | 0.001      |
| GH                                            | 47.4±9.73             | 46.8±9.90             | 48.4±9.35             | 0.012      |
| VT                                            | 55.9±9.58             | 55.5±9.90             | 56.7±8.97             | 0.040      |
| SF                                            | 53.6±6.34             | 53.4±6.54             | 53.9±5.98             | 0.225      |
| RE                                            | 51.4±9.51             | 51.4±9.49             | 51.5±9.55             | 0.895      |
| MH                                            | 49.8±10.2             | 48.9±10.5             | 51.4±9.52             | <0.001     |
| PCS                                           | 52.1±7.24             | 51.6±7.32             | 52.8±7.05             | 0.014      |
| MCS                                           | 51.9±9.01             | 51.5±9.31             | 52.4±8.46             | 0.135      |

SD, standard deviation; VitD, vitamin D; HBM, health belief model; HRQoL, health-related quality of life; PF, physical functioning; RP, role physical; BP, bodily pain; GH, general health; VT, vitality; SF, social functioning; RE, role emotional; MH, mental health; PCS, physical component summary; MCS, mental component summary

\**p* value < 0.05 denotes statistical significance.

**Supplementary Table 2.** Sociodemographic variables, HBM and HRQoL of the study participants stratified by age of 65 years

| Variables, expressed as mean±SD or number (%) | Overall           | Age <65 years     | Age ≥65          | <i>p</i> * |
|-----------------------------------------------|-------------------|-------------------|------------------|------------|
| Patient number                                | 1015 (100)        | 750 (73.9)        | 265 (26.1)       |            |
| Age                                           | 59.5±9.95         | 55.5±7.92         | 71.1±4.66        | <0.001     |
| Sex                                           |                   |                   |                  | 0.001      |
| Men                                           | 377 (37.1)        | 235 (33.8)        | 142 (44.3)       |            |
| Women                                         | 638 (62.9)        | 460 (66.2)        | 178 (55.7)       |            |
| Educational attainment                        |                   |                   |                  | <0.001     |
| High school                                   | 797 (78.6)        | 567(75.6)         | 230 (86.8)       |            |
| College and above                             | 218(21.4)         | 183(24.4)         | 35 (13.2)        |            |
| Diet (vegetarian: non-vegetarian)             | 31(3.1):984(96.9) | 24(3.2):726(96.8) | 7(2.6):258(97.4) | 0.650      |
| Smoking (yes)                                 | 187(18.4)         | 131(17.5)         | 156(21.1)        | 0.186      |
| Drinking (yes)                                | 409(40.3)         | 322(42.9)         | 87(32.8)         | 0.004      |
| Betel nut usage (yes)                         | 47(4.6)           | 39(5.2)           | 8(3.0)           | 0.146      |
| Serum 25 (OH) D level (ng/mL)                 | 29.6±11.0         | 28.3±10.4         | 33.2±11.2        | <0.001     |
| VitD insufficiency (%)                        | 558(55.0)         | 452(60.3)         | 106(40.0)        | <0.001     |
| HBM                                           |                   |                   |                  |            |
| Perceived susceptibility                      | 26.3±5.32         | 26.8±5.39         | 25.1±4.94        | <0.001     |
| Perceived severity                            | 28.7±5.52         | 29.2±5.26         | 27.3±5.99        | <0.001     |
| Perceived benefits                            | 44.3±5.49         | 44.7±5.22         | 43.1±6.06        | <0.001     |
| Perceived barriers                            | 31.1±14.9         | 31.6±14.7         | 29.5±15.6        | 0.057      |
| Self-efficacy                                 | 65.3±9.73         | 65.0±9.75         | 66.2±9.64        | 0.085      |
| Cue to action                                 | 35.8±5.10         | 36.0±4.91         | 34.9±5.55        | 0.004      |
| HRQoL                                         |                   |                   |                  |            |
| PF                                            | 52.5±6.75         | 53.4±5.70         | 49.8±8.59        | <0.001     |
| RP                                            | 51.4±9.76         | 51.8±9.36         | 50.0±10.7        | 0.012      |
| BP                                            | 54.3±9.24         | 54.8±8.94         | 52.9±9.90        | 0.005      |
| GH                                            | 47.4±9.73         | 47.5±9.53         | 46.9±10.3        | 0.374      |
| VT                                            | 55.9±9.58         | 55.7±9.53         | 56.5±9.71        | 0.290      |
| SF                                            | 53.6±6.34         | 53.5±6.50         | 53.8±5.86        | 0.467      |
| RE                                            | 51.4±9.51         | 51.7±9.14         | 50.8±10.5        | 0.218      |
| MH                                            | 49.9±10.2         | 49.5±10.2         | 50.9±10.2        | 0.064      |
| PCS                                           | 52.1±7.2          | 52.9±6.74         | 49.8±8.13        | <0.001     |
| MCS                                           | 51.9±9.01         | 51.4±8.96         | 53.2±9.04        | 0.011      |

SD, standard deviation; VitD, vitamin D; HBM, health belief model; HRQoL, health-related quality of life; PF, physical functioning; RP, role physical; BP, bodily pain; GH, general health; VT, vitality; SF, social functioning; RE, role emotional; MH, mental health; PCS, physical component summary; MCS, mental component summary

\**p* value < 0.05 denotes statistical significance

**Supplementary Table 3.** Sociodemographic variables, HBM and HRQoL of the study participants stratified by education attainment

| Variables, expressed as mean±SD or number (%) | Overall               | High school           | College and above    | <i>p</i> * |
|-----------------------------------------------|-----------------------|-----------------------|----------------------|------------|
| Patient number                                | 1015 (100)            | 797 (78.5)            | 218 (21.5)           |            |
| Age                                           | 59.5±9.95             | 61.1±8.86             | 53.8±11.5            | <0.001     |
| <65: ≥65                                      | 750 (73.9):265 (26.1) | 567 (71.1):230 (28.9) | 183 (83.9):35 (16.1) | <0.001     |
| Sex                                           |                       |                       |                      | 0.004      |
| Men                                           | 377 (37.1)            | 268 (33.6)            | 109 (50.0)           |            |
| Women                                         | 638 (62.9)            | 529 (66.4)            | 109 (50.0)           |            |
| Diet (vegetarian: non-vegetarian)             | 31(3.1):984(96.9)     | 24(3.0):773(97.0)     | 7(3.2):211(96.8)     | 0.879      |
| Smoking (yes)                                 | 187(18.4)             | 149(18.7)             | 38(17.4)             | 0.670      |
| Drinking (yes)                                | 409(40.3)             | 326(40.9)             | 83(38.1)             | 0.450      |
| Betel nut usage (yes)                         | 47(4.6)               | 41(5.1)               | 6(2.8)               | 0.136      |
| Serum 25 (OH) D level (ng/mL)                 | 29.6±11.0             | 30.4±10.7             | 26.8±10.9            | <0.001     |
| VitD insufficiency (%)                        | 558(55.0)             | 416(52.2)             | 142(65.1)            | 0.001      |
| HBM                                           |                       |                       |                      |            |
| Perceived susceptibility                      | 26.3±5.32             | 25.9±5.25             | 27.9±5.30            | <0.001     |
| Perceived severity                            | 28.7±5.52             | 28.4±5.62             | 29.9±4.94            | <0.001     |
| Perceived benefits                            | 44.3±5.49             | 43.8±5.61             | 45.9±4.72            | <0.001     |
| Perceived barriers                            | 31.1±14.9             | 30.8±15.1             | 32.1±14.1            | 0.251      |
| Self-efficacy                                 | 65.3±9.73             | 65.2±9.90             | 65.6±9.11            | 0.581      |
| Cue to action                                 | 35.8±5.10             | 35.4±5.15             | 37.0±4.73            | <0.001     |
| HRQoL                                         |                       |                       |                      |            |
| PF                                            | 52.5±6.75             | 52.2±6.82             | 53.4±6.46            | 0.026      |
| RP                                            | 51.4±9.76             | 51.0±10.1             | 52.8±8.40            | 0.005      |
| BP                                            | 54.3±9.24             | 54.0±9.31             | 55.6±8.88            | 0.020      |
| GH                                            | 47.4±9.73             | 47.6±9.73             | 46.7±9.69            | 0.245      |
| VT                                            | 55.9±9.58             | 56.3±9.59             | 54.6±9.42            | 0.024      |
| SF                                            | 53.6±6.33             | 53.7±6.24             | 53.0±6.68            | 0.166      |
| RE                                            | 51.4±9.51             | 51.3±9.65             | 51.8±8.96            | 0.537      |
| MH                                            | 49.9±10.2             | 50.3±10.13            | 48.1±10.2            | 0.004      |
| PCS                                           | 52.1±7.24             | 51.7±7.33             | 53.5±6.70            | 0.001      |
| MCS                                           | 51.9±9.01             | 52.4±8.92             | 50.0±9.07            | 0.001      |

SD, standard deviation; VitD, vitamin D; HBM, health belief model; HRQoL, health-related quality of life; PF, physical functioning; RP, role physical; BP, bodily pain; GH, general health; VT, vitality; SF, social functioning; RE, role emotional; MH, mental health; PCS, physical component summary; MCS, mental component summary

\**p* value < 0.05 denotes statistical significance.

**Supplementary Table 4.** Sociodemographic variables, HBM and HRQoL of the study participants stratified by the cutoff of LDL 102.7 mg/dL

| Variables, expressed as mean±SD or number (%) | Overall               | LDL<102.7           | LDL≥102.7           | <i>p</i> * |
|-----------------------------------------------|-----------------------|---------------------|---------------------|------------|
| Patient number                                | 1015 (100)            | 309(30.4)           | 706(69.6)           |            |
| Age                                           | 59.5±9.95             | 61.2±9.97           | 58.8±9.86           | <0.001     |
| <65: ≥65                                      | 750 (73.9):265 (26.1) | 205(66.3):104(33.7) | 545(77.2):161(22.8) | <0.001     |
| Sex                                           |                       |                     |                     | 0.045      |
| Men                                           | 377 (37.1)            | 129 (41.7)          | 248 (35.1)          |            |
| Women                                         | 638 (62.9)            | 180 (58.3)          | 458 (64.9)          |            |
| Educational attainment                        |                       |                     |                     | 0.165      |
| High school                                   | 797 (78.6)            | 251(81.2)           | 546(77.3)           |            |
| College and above                             | 218(21.4)             | 58(18.8)            | 160(22.7)           |            |
| Diet (vegetarian: non-vegetarian)             | 31(3.1):984(96.9)     | 14(4.5):295(95.5)   | 17(2.4):689(97.6)   | 0.071      |
| Smoking (yes)                                 | 187(18.4)             | 61(19.7)            | 126(17.8)           | 0.474      |
| Drinking(yes)                                 | 409(40.3)             | 128(41.4)           | 281(39.8)           | 0.628      |
| Betel nut usage (yes)                         | 47(4.6)               | 19(6.1)             | 28(4.0)             | 0.128      |
| Serum 25 (OH) D level (ng/mL)                 | 29.6±10.8             | 30.9±11.0           | 29.0±10.7           | 0.008      |
| VitD insufficiency (%)                        | 558(55.0)             | 147(47.6)           | 411(58.2)           | 0.002      |
| HBM                                           |                       |                     |                     |            |
| Perceived susceptibility                      | 26.3±5.32             | 26.3±5.55           | 26.4±5.22           | 0.836      |
| Perceived severity                            | 28.7±5.52             | 28.6±5.90           | 28.8±5.35           | 0.634      |
| Perceived benefits                            | 44.3±5.49             | 44.2±6.01           | 44.3±5.26           | 0.943      |
| Perceived barriers                            | 31.1±14.9             | 30.7±16.3           | 31.2±14.3           | 0.672      |
| Self-efficacy                                 | 65.3±9.73             | 66.6±9.18           | 64.7±9.91           | 0.005      |
| Cue to action                                 | 35.8±5.10             | 35.9±5.16           | 35.7±5.08           | 0.613      |
| HRQoL                                         |                       |                     |                     |            |
| PF                                            | 52.5±6.75             | 51.7±7.39           | 52.8±6.43           | 0.019      |
| RP                                            | 51.4±9.76             | 50.9±10.1           | 51.6±9.62           | 0.281      |
| BP                                            | 54.3±9.24             | 54.2±9.45           | 54.4±9.15           | 0.759      |
| GH                                            | 47.4±9.73             | 47.2±10.1           | 47.5±9.56           | 0.681      |
| VT                                            | 55.9±9.58             | 56.1±9.56           | 55.9±9.59           | 0.738      |
| SF                                            | 53.6±6.34             | 53.2±7.11           | 53.8±5.96           | 0.214      |
| RE                                            | 51.4±9.51             | 51.7±9.29           | 51.3±9.61           | 0.571      |
| MH                                            | 49.9±10.2             | 50.6±10.5           | 49.5±10.0           | 0.111      |
| PCS                                           | 52.1±7.24             | 51.4±7.87           | 52.4±6.92           | 0.061      |
| MCS                                           | 51.9±9.01             | 52.5±9.75           | 51.6±8.65           | 0.127      |

SD, standard deviation; VitD, vitamin D; HBM, health belief model; HRQoL, health-related quality of life; PF, physical functioning; RP, role physical; BP, bodily pain; GH, general health; VT, vitality; SF, social functioning; RE, role emotional; MH, mental health; PCS, physical component summary; MCS, mental component summary.

The cutoff value of LDL determined by receiver operating characteristic curve was 102.7 (area under curve:0.725, *p* <0.01) based upon the occurrence of VitD insufficiency.

\**p* value < 0.05 denotes statistical significance.

**Supplementary Table 5.** Sociodemographic variables, HBM and HRQoL of the study participants stratified by the presence of alcohol drinking

| Variables, expressed as mean±SD or number (%) | Overall               | No alcohol drinking   | Alcohol drinking     | <i>p</i> * |
|-----------------------------------------------|-----------------------|-----------------------|----------------------|------------|
| Patient number                                | 1015 (100)            | 606 (59.7)            | 409 (40.3)           |            |
| Age                                           | 59.53±9.95            | 60.50±9.99            | 58.08±9.72           | <0.001     |
| <65: ≥65                                      | 750 (73.9):265 (26.1) | 428 (70.6):178 (29.4) | 322 (78.7):87 (21.3) | 0.004      |
| Sex                                           |                       |                       |                      | <0.001     |
| Men                                           | 377 (37.1)            | 161 (26.6)            | 216 (52.8)           |            |
| Women                                         | 638 (62.9)            | 445 (73.4)            | 193 (47.2)           |            |
| Educational attainment                        |                       |                       |                      | 0.450      |
| High school                                   | 797 (78.6)            | 471(77.7)             | 326 (79.7)           |            |
| College and above                             | 218(21.4)             | 135(22.3)             | 83 (20.3)            |            |
| Diet (vegetarian: non-vegetarian)             | 31(3.1):984(96.9)     | 21(3.5):585(96.5)     | 10(2.4):399((97.6)   | 0.354      |
| Smoking (yes)                                 | 187(18.4)             | 71(11.7)              | 116(28.4)            | <0.001     |
| Betel nut usage (yes)                         | 47(4.6)               | 12(2.0)               | 35(8.6)              | <0.001     |
| Serum 25 (OH) D level (ng/mL)                 | 29.59±10.80           | 27.22±9.61            | 33.68±11.97          | <0.001     |
| VitD insufficiency (%)                        | 558(55.0)             | 359(59.2)             | 199(48.7)            | 0.001      |
| HBM                                           |                       |                       |                      |            |
| Perceived susceptibility                      | 26.33±5.32            | 26.57±5.14            | 25.98±5.57           | 0.081      |
| Perceived severity                            | 28.70±5.52            | 28.72±5.42            | 28.66±5.67           | 0.866      |
| Perceived benefits                            | 44.25±5.49            | 44.47±5.30            | 43.92±5.76           | 0.122      |
| Perceived barriers                            | 31.05±14.93           | 30.12±15.01           | 32.42±14.73          | 0.017      |
| Self-efficacy                                 | 65.26±9.73            | 66.56±9.81            | 63.32±9.29           | <0.001     |
| Cue to action                                 | 35.75±5.10            | 36.07±5.21            | 35.26±4.91           | 0.013      |
| HRQoL                                         |                       |                       |                      |            |
| PF                                            | 52.46±6.75            | 52.34±6.62            | 52.65±6.95           | 0.481      |
| RP                                            | 51.35±9.76            | 51.20±9.80            | 51.56±9.70           | 0.563      |
| BP                                            | 54.33±9.24            | 51.15±9.30            | 54.58±9.16           | 0.474      |
| GH                                            | 47.37±9.73            | 47.36±9.78            | 47.39±9.66           | 0.961      |
| VT                                            | 55.93±9.58            | 56.00±9.81            | 55.82±9.23           | 0.771      |
| SF                                            | 53.58±6.34            | 53.86±5.88            | 53.15±6.95           | 0.083      |
| RE                                            | 51.41±9.51            | 51.36±9.69            | 51.48±9.24           | 0.844      |
| MH                                            | 49.85±10.18           | 49.56±10.31           | 50.27±9.99           | 0.282      |
| PCS                                           | 52.09±7.24            | 52.01±7.30            | 52.21±7.15           | 0.672      |
| MCS                                           | 51.87±9.01            | 51.80±8.99            | 51.96±9.04           | 0.788      |

SD, standard deviation; VitD, vitamin D; HBM, health belief model; HRQoL, health-related quality of life; PF, physical functioning; RP, role physical; BP, bodily pain; GH, general health; VT, vitality; SF, social functioning; RE, role emotional; MH, mental health; PCS, physical component summary; MCS, mental component summary.

\**p* value < 0.05 denotes statistical significance.

**Supplementary Table 6.** Sociodemographic variables, HBM and HRQoL of the study participants stratified by the cutoff of RE 55.3 mg/dL

| Variables, expressed as mean±SD or number (%) | Overall               | RE<55.3            | RE≥55.3             | <i>p</i> * |
|-----------------------------------------------|-----------------------|--------------------|---------------------|------------|
| Patient number                                | 1015 (100)            | 173(17.1)          | 838(82.9)           |            |
| Age                                           | 59.53±9.95            | 60.14±9.95         | 59.38±9.96          | 0.364      |
| <65: ≥65                                      | 750 (73.9):265 (26.1) | 126(72.8):47(27.2) | 621(74.1):217(25.9) | 0.729      |
| Sex                                           |                       |                    |                     | 0.584      |
| Men                                           | 377 (37.1)            | 61 (35.3)          | 314 (37.5)          |            |
| Women                                         | 638 (62.9)            | 112 (64.7)         | 524 (62.5)          |            |
| Educational attainment                        |                       |                    |                     | 0.640      |
| High school                                   | 797 (78.6)            | 138(79.8)          | 655(78.2)           |            |
| College and above                             | 218(21.4)             | 35(20.2)           | 183(21.8)           |            |
| Diet (vegetarian: non-vegetarian)             | 31(3.1):984(96.9)     | 7(4.0):166(96.0)   | 23(2.7):815(97.3)   | 0.358      |
| Smoking (yes)                                 | 187(18.4)             | 37(21.4)           | 149(17.8)           | 0.265      |
| Drinking(yes)                                 | 407(40.3)             | 72(41.6)           | 335(40.0)           | 0.688      |
| Betel nut usage (yes)                         | 47(4.6)               | 7(4.0)             | 39(4.7)             | 0.727      |
| Serum 25 (OH) D level (ng/mL)                 | 29.59±10.80           | 29.05±10.98        | 29.68±10.71         | 0.483      |
| VitD insufficiency (%)                        | 558(55.0)             | 109(63.0)          | 447(53.3)           | 0.020      |
| HBM                                           |                       |                    |                     |            |
| Perceived susceptibility                      | 26.33±5.32            | 26.52±4.64         | 26.31±5.45          | 0.598      |
| Perceived severity                            | 28.70±5.52            | 28.39±5.48         | 28.76±5.54          | 0.424      |
| Perceived benefits                            | 44.25±5.49            | 43.84±5.29         | 44.35±5.53          | 0.272      |
| Perceived barriers                            | 31.05±14.93           | 36.58±12.94        | 29.93±15.07         | <0.001     |
| Self-efficacy                                 | 65.26±9.73            | 63.35±9.96         | 65.63±9.64          | 0.005      |
| Cue to action                                 | 35.75±5.10            | 35.94±4.73         | 35.72±5.17          | 0.617      |
| HRQoL                                         |                       |                    |                     |            |
| PF                                            | 52.46±6.75            | 48.80±8.30         | 53.21±6.14          | <0.001     |
| RP                                            | 51.35±9.76            | 41.69±12.10        | 53.32±7.87          | <0.001     |
| BP                                            | 54.33±9.24            | 48.72±10.31        | 55.48±8.56          | <0.001     |
| GH                                            | 47.37±9.73            | 40.68±9.87         | 48.73±9.11          | <0.001     |
| VT                                            | 55.93±9.58            | 48.71±10.33        | 57.39±8.72          | <0.001     |
| SF                                            | 53.58±6.34            | 48.68±9.07         | 54.59±5.05          | <0.001     |
| RE                                            | 51.41±9.51            | 32.38±9.55         | 55.34±1.00          | <0.001     |
| MH                                            | 49.85±10.18           | 41.38±11.56        | 51.56±8.94          | <0.001     |
| PCS                                           | 52.09±7.24            | 49.05±8.41         | 52.71±6.81          | <0.001     |
| MCS                                           | 51.87±9.01            | 39.00±9.55         | 54.50±6.19          | <0.001     |

SD, standard deviation; VitD, vitamin D; HBM, health belief model; HRQoL, health-related quality of life; PF, physical functioning; RP, role physical; BP, bodily pain; GH, general health; VT, vitality; SF, social functioning; RE, role emotional; MH, mental health; PCS, physical component summary; MCS, mental component summary.

The cutoff value of RE determined by receiver operating characteristic curve was 55.3 (area under curve:0.725, *p* <0.01) based upon the occurrence of VitD insufficiency.

\**p* value < 0.05 denotes statistical significance.

**Supplementary Table 7.** Correlation analysis between HBM and HRQoL in the study participants

|                             | Perceived<br>susceptibility<br>1 | Perceived<br>severity | Perceived<br>barrier | Perceived<br>benefit | Self-<br>efficacy | Cue to<br>action | PF     | RP     | BP     | GH     | VT     | SF     | RE     | MH     | PCS   | MCS |
|-----------------------------|----------------------------------|-----------------------|----------------------|----------------------|-------------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-----|
| Perceived<br>susceptibility | 1                                |                       |                      |                      |                   |                  |        |        |        |        |        |        |        |        |       | -   |
| Perceived<br>severity       | .497**                           | 1                     |                      |                      |                   |                  |        |        |        |        | -      |        |        |        |       | -   |
| Perceived barrier           | .114**                           | 0.056                 | 1                    |                      |                   |                  |        |        | -      |        |        |        |        |        |       | -   |
| Perceived benefit           | .322**                           | .389**                | -0.014               | 1                    |                   |                  |        |        |        |        |        |        |        |        |       |     |
| Self-efficacy               | .093**                           | .066*                 | -.202**              | .278**               | 1                 |                  |        |        |        |        |        |        |        |        |       | .   |
| Cue to action               | .214**                           | .177**                | -0.044               | .410**               | .502**            | 1                |        |        |        |        |        |        |        |        |       |     |
| PF                          | -0.045                           | 0.048                 | -.127**              | 0.045                | 0.051             | 0.044            | 1      |        |        |        |        |        |        |        |       |     |
| RP                          | -0.038                           | 0.024                 | -.134**              | 0.036                | .075*             | 0.026            | .395** | 1      |        |        |        |        |        |        |       |     |
| BP                          | -.078*                           | -0.02                 | -.081*               | 0.011                | 0.004             | -0.007           | .419** | .403** | 1      |        |        |        |        |        |       |     |
| GH                          | -.112**                          | -0.026                | -.128**              | 0.028                | .143**            | 0.046            | .303** | .357** | .341** | 1      |        |        |        |        |       |     |
| VT                          | -.096**                          | -0.045                | -.165**              | 0.027                | .148**            | .063*            | .244** | .331** | .292** | .615** | 1      |        |        |        |       |     |
| SF                          | -0.019                           | -0.021                | -.096**              | -0.015               | 0.047             | -0.037           | .281** | .427** | .340** | .370** | .362** | 1      |        |        |       |     |
| RE                          | -0.008                           | 0.001                 | -.162**              | 0.029                | .074*             | -0.017           | .263** | .501** | .279** | .328** | .335** | .369** | 1      |        |       |     |
| MH                          | -.076*                           | -0.056                | -.157**              | -0.021               | .077*             | -0.001           | .225** | .305** | .288** | .575** | .722** | .458** | .382** | 1      |       |     |
| PCS                         | -.084*                           | 0.036                 | -.096**              | 0.061                | .065*             | 0.056            | .730** | .707** | .728** | .523** | .304** | .340** | .204** | .165** | 1     |     |
| MCS                         | -0.053                           | -0.053                | -.179**              | -0.006               | .092**            | -0.009           | .092** | .306** | .196** | .542** | .744** | .560** | .685** | .877** | 0.021 | 1   |

BM, health belief model; HRQoL, health-related quality of life; PF, physical functioning; RP, role physical; BP, bodily pain; GH, general health; VT, vitality; SF, social functioning; RE, role emotional; MH, mental health; PCS, physical component summary; MCS, mental component summary.

\**p* value < 0.05 and \*\**p* value < 0.01 denote statistical significance.