|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nursing unit | Patient classification | Average number of patients per day | Patient classification score | Patient classification score per patient | Weighting coefficient | Nursing intensity weighting coefficient | Average number of nurses per day | Nursing intensity score per nurse |
| a | b | c=b/a | d | a\*d |  |  |
| Unit 1 Internal medicine unit | Group 1 | 11.6 | 446.6 | 38.6 | 1.0 | 11.6 |  |  |
| Group 2 | 10.9 | 643.0 | 59.2 | 1.5 | 16.35 |  |  |
| Group 3 | 15.6 | 1,268.7 | 81.5 | 2.1 | 32.76 |  |  |
| Group 4 | 1.7 | 185.7 | 108.3 | 2.8 | 4.76 |  |  |
| Total | 39.7 | 2,544.0 | 64.1 | 1.7 | 67.49 | 12.4 | 5.4 |
| Unit 2 Surgical unit | Group 1 | 31.0 | 1,129.0 | 36.4 | 1.0 | 31 |  |  |
| Group 2 | 21.9 | 1,265.7 | 57.9 | 1.6 | 35.04 |  |  |
| Group 3 | 11.6 | 955.4 | 82.6 | 2.3 | 26.68 |  |  |
| Group 4 | 3.3 | 351.9 | 107.1 | 2.9 | 9.57 |  |  |
| Total | 67.7 | 3,702.0 | 54.7 | 1.5 | 101.55 | 17.9 | 5.7 |
| Unit 3 Nursing care unit | Group 1 | 11.3 | 439.0 | 38.9 | 1 | 11.3 |  |  |
| Group 2 | 6.0 | 341.7 | 57.0 | 1.5 | 9 |  |  |
| Group 3 | 3.0 | 246.1 | 82.0 | 2.1 | 6.3 |  |  |
| Group 4 | 0.1 | 15.1 | 106.0 | 2.7 | 0.27 |  |  |
| Total | 20.4 | 1,042.0 | 51.0 | 1.3 | 26.52 | 11.0 | 2.4 |

**Table 1.** Comparison of nursing intensity by nursing units

**Table 2.** Total working hours, non-direct nursing time, and leisure time

|  |  |  |  |
| --- | --- | --- | --- |
|  | Internal medicine unit | Surgical unit  | Nursing care unit |
| Daily average(min) | Average time per person(min) | % | Daily average(min) | Average time per person(min) | % | Daily average(min) | Average time per person(min) | % |
| Number of nurses (person) |  |  |  |  |  |  |  |  |  |
| Sum of TWT Total working time of all nurses (min) | 7,593.6  | 612.4 | 100 | 10,994.6  | 614.2 | 100 | 6,283.7  | 571.2 | 100 |
| Sum of indirect nursing time (min) | 1. Planning and coordinating nursing activities  | 1,455.7  | 117.4 | 19.2  | 2,880.0  | 160.9 | 26.2  | 2,596.4  | 236.0 | 41.3  |
| Hand over | 377.9  | 30.5 | 5.0  | 795.0  | 44.4 | 7.2  | 647.1  | 58.8 | 10.3  |
| Assessment | 694.3  | 56.0 | 9.1  | 1,614.3  | 90.2 | 14.7  | 1,626.4  | 147.9 | 25.9  |
| Delayed work | 383.6  | 30.9 | 5.1  | 470.7  | 26.3 | 4.3  | 322.9  | 29.4 | 5.1  |
| 2. Indirect nursing time | 1,667.4  | 134.5 | 22.0  | 2,279.1  | 127.3 | 20.7  | 2,080.7  | 189.2 | 33.1  |
| Recording | 785.3  | 63.3 | 10.3  | 1,148.3  | 64.2 | 10.4  | 1,240.7  | 112.8 | 19.7  |
| Calls from patients | 219.0  | 17.7 | 2.9  | 294.7  | 16.5 | 2.7  | 284.3  | 25.8 | 4.5  |
| Calls from patients’ family | 198.3  | 16.0 | 2.6  | 215.7  | 12.1 | 2.0  | 162.1  | 14.7 | 2.6  |
| Administrative work | 260.0  | 21.0 | 3.4  | 253.6  | 14.2 | 2.3  | 124.3  | 11.3 | 2.0  |
| Notifying doctors | 204.9  | 16.5 | 2.7  | 366.9  | 20.5 | 3.3  | 269.3  | 24.5 | 4.3  |
| Subtotal | 3,123.1  | 251.9 | 41.1  | 5,159.1  | 288.2 | 46.9  | 4,677.1  | 425.2 | 74.4  |
| Sum of leisure time(min) |  Meal | 192.1  | 15.5 | 2.5  | 227.3  | 12.7 | 2.1  | 206.4  | 18.8 | 3.3  |
|  Tea | 53.0  | 4.3 | 0.7  | 36.1  | 2.0 | 0.3  | 43.7  | 4.0 | 0.7  |
|  Restroom | 64.9  | 5.2 | 0.9  | 62.0  | 3.5 | 0.6  | 70.9  | 6.4 | 1.1  |
|  Others | 3.6  | 0.3 | 0.0  | 8.6  | 0.5 | 0.1  | 0.0  | 0.0 | 0.0  |
| Subtotal | 313.6  | 25.3 | 4.1  | 334.0  | 18.7 | 3.0  | 321.0  | 29.2 | 5.1  |
| NDNT | 3,436.7  | 277.2 | 45.3  | 5,493.1  | 306.9 | 50.0  | 4,998.1  | 454.4 | 79.5  |
| DNT  | 4,156.9  | 335.2 | 54.7  | 5,501.4  | 307.3 | 50.0  | 1,285.6  | 116.9 | 20.5  |
| Average number of practicing nurses | 12.4  |  |  | 17.9  |  |  | 11.0  |  |  |
| \*: TWT: Total working time, NDNT: Non-direct nursing time, DNT: Direct nursing time |

**Table 3.** Direct nursing time per patient in the nursing units

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Nursing unit | Patient classification | WC |  DNT*p*NI\* | DNT*p*Pt |
| Internal medicine unit | Group 1 | 1.0 | 61.6  | DNTpPt1=61.6 mins(=1.0 hrs) |
| Group 2 | 1.5 | 61.6 | DNTpPt2=92.4 mins(=1.5 hrs) |
| Group 3 | 2.1 | 61.6 | DNTpPt3=129.3 mins(=2.2 hrs) |
| Group 4 | 2.8 | 61.6 | DNTpPt4= 172.5 mins(=2.9 hrs) |
| Surgical unit | Group 1 | 1.0 | 54.2 | DNTpPt1=54.2 mins(=0.9 hrs) |
| Group 2 | 1.6 | 54.2 | DNTpPt2=86.7 mins(=1.4 hrs) |
| Group 3 | 2.3 | 54.2 | DNTpPt3=124.6 mins(=2.1 hrs) |
| Group 4 | 2.9 | 54.2 | DNTpPt4= 157.1 mins(=2.6 hrs) |
| Nursing care unit | Group 1 | 1 | 48.5 | DNTpPt1=48.5 mins(=0.8 hrs) |
| Group 2 | 1.5 | 48.5 | DNTpPt2=72.7 mins(=1.2 hrs) |
| Group 3 | 2.1 | 48.5 | DNTpPt3=101.8 mins(=1.7 hrs) |
| Group 4 | 2.7 | 48.5 | DNTpPt4= 130.9 mins(=2.2 hrs) |
| WC: Weighting coefficient, DNTpNI: Direct nursing time per nursing intensity weighting coefficient, DNTpPt: Direct nursing time per patient, \* Medical: \* Surgical: \* Mixed: |

**Table 4.** Calculation of the optimal number of nurses in nursing units

|  |  |  |  |
| --- | --- | --- | --- |
|  | Internal medicine unit | Surgical unit | Nursing care unit  |
| TNW (hours) | 69.3 | 91.7 | 21.4 |
|  TDNT (hours)  | 57.3 | 91.6 | 83.3 |
| TNDNT (=TDNT×20/80) (hours) | 126.6 | 183.2 | 104.7 |
| ONN (persons) | 25(24.6) | 37(36.9) | 22(21.2) |
| Available number of nurses in each unit (persons) | 20 | 28 | 22 |
| Number of nurses requiring additional employment (persons) | 5 | 9 | 0 |
| TNW: Total Nursing Workload, TDNT: Total Direct Nursing Time, TNDNT: Total Non-direct Nursing Time, ONN: Optimal number of Nurse |