

Supplemental Figure 3. Scoring manual of the Health-related Quality of Life Instrument with 20 Items (HINT-20).

The HINT-20 is a novel generic health-related quality of life measurement instrument using a 4-point Likert scale and 1-week recall period. It consists of 4 health dimensions and 20 items.

- Physical health dimension (8 items)
 - Walking
 - Climbing stairs
 - Doing housework
 - Seeing
 - Pain
 - Symptoms limiting usual activities
 - Vitality
 - Fatigue

- Social health dimension (4 items)
 - Family relationships
 - Relationships with people other than family
 - Building relationships with new people
 - Working

- Mental health dimension (5 items)
 - Depression
 - Loneliness
 - Memory
 - Concentration
 - Sleep

- Positive health dimension (3 items)
 - Happiness
 - Confidence
 - Satisfaction

First step: coding data and recoding data to a raw score

The first step begins with coding data and converting the data to a raw score. As shown below, the coding method differs according to the 4 types of response options. The 20 items of the HINT-20 each belong to 1 of the 4 types. Each item receives a raw score from 1 to 4 points: 4 points means that no problem is present, whereas 1 point means an extremely severe problem. See the following descriptions.

Type A

- Walking
- Climbing stairs
- Doing housework
- Seeing
- Relationships with family
- Relationships with people other than family
- Relationships with new people
- Working
- Memory
- Concentration
- Sleep

Response options	Coding	Raw score
No difficulty	1	4
Some difficulty	2	3
Much difficulty	3	2
Unable	4	1

Type B

- Pain
- Symptoms limiting usual activities

Response options	Coding	Raw score
No	1	4
Mild	2	3
Severe	3	2
Extreme	4	1

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Supplemental Figure 3. Continued from the previous page

Type C		
<ul style="list-style-type: none"> • Vitality • Happiness • Confidence • Satisfaction 		
Response options	Coding	Raw score
Always	1	4
Often	2	3
Occasionally	3	2
Never	4	1

Type D		
<ul style="list-style-type: none"> • Fatigue • Depression • Loneliness 		
Response options	Coding	Raw score
Never	1	4
Occasionally	2	3
Often	3	2
Always	4	1

Second step: calculating the raw score

The next step is to calculate the sum of all items included in each dimension. In this process, 4 raw dimensional scores and a total raw score of the HINT-20 are obtained. The maximum and minimum scores of the 4 dimensions are different. See the following descriptions.

Health dimension	Minimum raw score	Maximum raw score
Physical	8	32
Social	4	16
Mental	5	20
Positive	3	12
Total	20	80

Third step: linear transformation

The total raw score of the HINT-20 calculated in the previous step is converted to a 0-100 scale using the following equation:

$$S_T = \left(\frac{S_R - 20}{80 - 20} \right) \times 100$$

S_T : total transformed score

S_R : total raw score

Fourth step: interpretation

Higher scores in the HINT-20 indicate better HRQoL. Care should be taken when interpreting the transformed total score because the physical dimension comprises 8 of the 20 items.