

Michigan Hand Outcomes Questionnaire

Overview: The Michigan Hand Outcomes Questionnaire was developed to measure health state domains important to patients with hands disorders. The instrument can be used to evaluate a patient prior to hand surgery and to monitor function after the surgery. The authors are from the University of Michigan Medical Center in Ann Arbor.

Components - 11 scores:

- (1) overall hand function (1 for left hand and 1 for right)
- (2) activities of daily living (1 for left hand 1 for right and 1 for both)
- (3) work (1 for both hands)
- (4) pain (1 for both hands)
- (5) aesthetics (1 for left hand and 1 for right)
- (6) satisfaction (1 for left hand and 1 for right)

Overall hand function (worded for left or right): The following questions refer to the function of your hand(s) and/or wrist(s) during the past week.

- (1) Overall how well did your hand work?
- (2) How well did your fingers move?
- (3) How well did your wrist move?
- (4) How was the strength in your hand?
- (5) How was the sensation (feeling) in your hand?

| Response | Points |
|-----------|--------|
| very good | 1 |
| good | 2 |
| fair | 3 |
| poor | 4 |
| very poor | 5 |

Activities of daily living for 1 hand (worded for left or right): The following questions refer to the ability of your hand(s) to do certain tasks during the past week. How difficult was it for you to perform the following activities using your hand?

- (1) Turn a door knob.
- (2) Pick up a coin.

(3) Hold a glass of water.

(4) Turn a key in the lock.

(5) Hold a frying pan.

| Response | Points |
|----------------------|---------------|
| not at all difficult | 1 |
| a little difficult | 2 |
| somewhat difficult | 3 |
| moderately difficult | 4 |
| very difficult | 5 |

Activities of daily living using both hands: How difficult was it for you to perform the following activities using both of your hands?

(1) Open a jar.

(2) Button a shirt or blouse.

(3) Eat with a knife and fork.

(4) Carry a grocery bag.

(5) Wash dishes.

(6) Wash your hair.

(7) Tie shoelaces or knots

| Response | Points |
|----------------------|---------------|
| not at all difficult | 1 |
| a little difficult | 2 |
| somewhat difficult | 3 |
| moderately difficult | 4 |
| very difficult | 5 |

Normal work: The following questions refer to how you did in your normal work (including both housework and school work) during the past 4 weeks.

(1) How often were you unable to do your work because of problems with your hand(s) and/or wrist(s)?

(2) How often did you have to shorten your work day because of problems with your hand(s)?

(3) How often did you have to take it easy at your work because of problems with your hand(s) or wrist(s)?

(4) How often did you accomplish less in your work because of problems with your hand(s) or wrist(s)?

(5) How often did you take longer to do the tasks in your work because of problems with your hand(s) or wrist(s)?

| Response | Points |
|-----------------|---------------|
| always | 1 |
| often | 2 |
| sometimes | 3 |
| rarely | 4 |
| never | 5 |

Pain: The following questions refer to how much pain you had in your hand(s) and/or wrist(s) during the past week.

(1) How often did you have pain in your hand(s) and/or wrists(s)?

(2) Please describe the pain you have in your hand(s) and/or wrists(s)?

(3) How often did the pain in your hand(s) and/or wrists(s) interfere with your sleep?

(4) How often did the pain in your hand(s) and/or wrists(s) interfere with your daily activities (such as eating or bathing)?

(5) How often did the pain in your hand(s) and/or wrists(s) make you unhappy?

| Response for 1 3 4 & 5 | Points |
|-----------------------------------|---------------|
| always | 1 |
| often | 2 |
| sometimes | 3 |
| rarely | 4 |
| never | 5 |

| Response for 2 | Points |
|-----------------------|---------------|
| very mild | 5 |
| mild | 4 |

| | |
|-------------|---|
| moderate | 3 |
| severe | 2 |
| very severe | 1 |

Recoding for pain: values question 2 are reversed

Appearance (looks): The following questions refer to the appearance (look) of your hand during the past week.

- (1) I was satisfied with the appearance (look) of my hand.
- (2) The appearance (look) of my hand sometimes made me uncomfortable in public.
- (3) The appearance (look) of my hand made me depressed.
- (4) The appearance (look) of my hand interfered with my normal social activities.

| Response | Points for 1 | Points for 2 3 and 4 |
|----------------------------|--------------|----------------------|
| strongly agree | 5 | 1 |
| agree | 4 | 2 |
| neither agree nor disagree | 3 | 3 |
| disagree | 2 | 4 |
| strongly disagree | 1 | 5 |

Recoding for aesthetics: values for question 1 are reversed

Satisfaction: The following questions refer to your satisfaction with your hand/wrist during the past week.

- (1) Overall function of your hand?
- (2) Motion of the fingers in your hand?
- (3) Motion of your wrist?
- (4) Strength level of your hand?
- (5) Pain level of your hand?
- (6) Sensation (feeling) of your hand?

| Response | Points |
|----------------|--------|
| very satisfied | 1 |

| | |
|------------------------------------|---|
| somewhat satisfied | 2 |
| neither satisfied nor dissatisfied | 3 |
| somewhat dissatisfied | 4 |
| very dissatisfied | 5 |

raw score for overall hand function = SUM(points for function of each hand)

raw score for activities of daily living = SUM(points for function of each hand)

raw score for work = SUM(points for work of each hand)

raw score for pain = SUM(points for pain of each hand)

raw score for aesthetics = SUM(points for aesthetics of each hand)

raw score for satisfaction = SUM(points for satisfaction with each hand)

Interpretation:

- range of scores for overall hand function: 5 to 25
- range of scores for activities of daily living: 5 to 25 for 1 hand 5 to 35 for 2 hands
- range of scores for work: 5 to 25
- range of scores for pain: 5 to 25
- range of scores for aesthetics: 4 to 20
- range of scores for satisfaction: 6 to 30
- Missing values may affect the validity of the scales. If 50% or more of the items are unanswered then the particular subscale cannot be graded. If more than 2 scales are incomplete then an overall score cannot be calculated.
- If 1 or 2 items are missing then the average of the known item responses can be used to infer the missing data.

Normalization of raw scores to range of 0-100% (with 100% indicating normal):

overall hand function in percent = $(25 - (\text{raw score})) / 20 * 100\%$

activities of daily living in percent with 1 hand = $(25 - (\text{raw score})) / 20 * 100\%$

activities of daily living in percent with 2 hands = $(35 - (\text{raw score})) / 28 * 100\%$

overall ADL = $((\text{ADL for hand}) + (\text{ADL for 2 hands})) / 2$

work in percent = $((\text{raw score}) - 5) / 20 * 100\%$

If there is no pain in the hand ("never" response to first question) then the pain score is 5 and the function is 100%.

If there is any pain in the hand (NOT "never" response to first question) then

pain in percent = $(25 - (\text{raw score})) / 20 * 100\%$

aesthetics in percent = $((\text{raw score}) - 4) / 16 * 100\%$

satisfaction in percent = $30 - (\text{raw score}) / 24 * 100\%$

Performance:

- The instrument has been found to be reliable and valid for measuring outcomes.
- Test-retest reliability using Spearman's correlation ranged from 0.81 to 0.97.
- Cronbach's alpha ranged from 0.86 to 0.97.
- Correlation between scales indicated construct validity.

References:

Chung KC Pillsbury MS et al. Reliability and validity testing of the Michigan Hand Outcomes Questionnaire. J Hand Surgery. 1998; 23A; 575-587.