

Patient-Reported Questionnaires in Multiple Sclerosis Rehabilitation: Responsiveness and Minimal Important Difference of the French Version of the Multiple Sclerosis Questionnaire for Physiotherapists

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ABSTRACT

Purpose: The aim of this study was to evaluate the responsiveness and minimal important difference (MID) of the French version of the Multiple Sclerosis Questionnaire for Physiotherapists (MSQPT). **Method:** A distribution-based approach was used. Patients (32) were recruited from inpatient and outpatient settings; they completed both the MSQPT and the Hamburg Quality of Life Questionnaire in Multiple Sclerosis (HAQUAMS) at baseline and again at 6 months or discharge. Responsiveness was evaluated using effect size (ES), standardized response mean (SRM), and modified SRM (MSRM), and the relative efficiency between the MSQPT and HAQUAMS was calculated. Distribution-based MID estimates were calculated for 0.33 SD, standard error of measurement, and minimal detectable change. **Results:** The main ES ranged from 0.41 (low) to 1.23 (high). The SRM (−0.89 to 2.69) was generally higher than the ES. The main MSRMs were acceptably low (−0.03 to 0.19). Although the MSQPT seemed more efficient than the HAQUAMS in detecting improved activity and participation, it was less efficient at identifying their deterioration. In a comparison of responsiveness and MID between the German and French versions of the MSQPT, the differences between estimates were small. **Conclusions:** The available evidence indicates that the French MSQPT is a responsive questionnaire with MIDs that are similar to those of the original German version.

Key Words: multiple sclerosis; patient-reported outcome; rehabilitation; responsiveness.

RÉSUMÉ

Objectif : évaluer la réactivité et la différence minimale importante (DMI) de la version française du *Multiple Sclerosis Questionnaire for Physiotherapists* (MSQPT). **Méthode :** approche par répartition. Les chercheurs ont recruté des patients (32) dans un cadre d'hospitalisation et un cadre ambulatoire. Ces patients ont rempli à la fois le MSQPT et le questionnaire Hamburg sur la qualité de vie en cas de sclérose en plaques (HAQUAMS) en début d'étude, puis six mois plus tard ou au congé. Les chercheurs ont évalué la réactivité au moyen de l'ampleur de l'effet (AE), de la réponse moyenne normalisée (RMN) et de la RMN modifiée (RMNM) et calculé l'efficacité relative du MSQPT par rapport au HAQUAMS. Ils ont calculé les évaluations de la DMI par répartition d'après un écart-type de 0,33, une erreur type de mesure et un changement minimal décelable. **Résultats :** L'AE moyenne se situait entre 0,41 (faible) et 1,23 (élevée). La RMN (−0,89 à 2,69) était généralement plus élevée que l'AE. Les RMNM moyennes étaient faibles, mais acceptables (−0,03 à 0,19). Le MSQPT semblait déceler avec plus d'efficacité que le HAQUAMS une amélioration de l'activité et de la participation, mais il était moins efficace pour déterminer la détérioration de leur état. La comparaison de la réactivité et de la DMI des versions allemande et française du MSQPT a établi que les différences étaient légères entre les évaluations. **Conclusion :** selon les données probantes, la version française du MSQPT est réactive et les DMI sont semblables à celles de la version allemande originale.

Mots-clés : réactivité; réadaptation; résultats cliniques observés par les patients; sclérose en plaques.

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Contributors: All authors designed the study; or collected, analyzed, or interpreted the data; and drafted or critically revised the article and approved the final draft.

Competing Interests: None declared.

This study was funded by grants from the Swiss MS Society (2011, 2012) and Physioswiss (2011). The funding did not include any involvement in the data analysis or in the execution or publication of the study.

The datasets are available from the corresponding author on reasonable request.

Acknowledgements: The authors are grateful for the support of the Swiss Specialized Group for Physiotherapy in Multiple Sclerosis and extend their thanks to all participating persons with multiple sclerosis.

Physiotherapy Canada 2020; e20190096; advance online article; doi:10.3138/ptc-2019-0096

Multiple sclerosis (MS) is a chronic inflammatory demyelinating disease of the central nervous system with autoimmune manifestations. The symptoms of MS include weakness, hypertonia, fatigue, abnormal sensations, optical and vesical problems, and ataxia. Individuals affected by MS are often restricted in their ability to walk, climb stairs, use public transportation, and participate in outdoor activities.¹ Physiotherapy and rehabilitation treatments are efficacious in enabling them to maintain normal activities, including their social life.²⁻⁷

Given the importance of evaluating physiotherapeutic treatment, the Swiss Specialized Group for Physiotherapy in Multiple Sclerosis has developed a patient-reported questionnaire, the Multiple Sclerosis Questionnaire for Physiotherapists (MSQPT). Following the framework of the *International Classification of Functioning, Disability and Health*,¹ the questionnaire items relate to forms of activity and participation that are important in the daily lives of people with MS and that can be improved with physiotherapy. Initially published in German,^{8,9} the MSQPT has been transculturally translated into French and validated using a small sample of patients with MS.¹⁰ The French version contains 33 items; 4 of these items (related to physical functions), three sections (activity, participation, and balance), and the total score have displayed good to high reliability and sufficient validity.¹⁰ They are well suited to and used for treatment evaluation.⁹ (The French version of the MSQPT and the evaluation instructions are reproduced in the online Appendix.)

An assessment of physiotherapeutic treatment for a chronic disease, such as MS, must be capable of measuring small changes in patients with slow progression. The ability to detect change over time is known as *responsiveness*.¹¹ The minimal important difference (MID) is an estimate of the minimum change or minimum difference that is meaningful for a patient.¹²

The present study evaluated the responsiveness of the French MSQPT and determined the MID values for its items and sections with sufficient reliability and validity, in the context of the inpatient and outpatient physiotherapy treatment received by MS patients in Switzerland. We subsequently compared the results of the French MSQPT with those of the German version. We also assessed the appropriateness of using the French distribution-based MID as a threshold for change during the rehabilitation of patients with MS.

METHODS

Study design

We carried out a prospective longitudinal observational study at eight centers, using a convenience sample ($N=32$). The study was approved by the ethics committees of all Swiss provinces in which it was conducted. All participants were recruited by the treating physiotherapist

and provided informed consent before participating. The usefulness of the MSQPT may vary in different treatment situations in Switzerland; one reason is that there is no limit to physiotherapy treatment. Long-term treatment may continue over years without a break, and regular or short-term treatment may vary from 9 to 36 therapy sessions. We included both long-term and short-term treatments to represent the real-world treatment situations. To enable a comparison of study results with those of previous MSQPT studies,^{8,9} we chose 6 months after baseline as the second timeline in the outpatient setting.

Participants

We recruited the participants from both inpatient and outpatient settings that reflect both short-term (3 wk)¹³ and long-term treatment, respectively. They consisted of French speakers aged older than 18 years, diagnosed with MS in accordance with the McDonald criteria; all had received physiotherapeutic treatment for MS, were able to read the MSQPT, and had Expanded Disability Status Scale scores of 6.5 or lower. This reference scale is widely used in clinical trials and practice to quantify disability in people with MS.¹⁴ The maximum score was set at 6.5 to include people who were still able to walk about 20 metres without resting while using a mobility aid at each side; this skill was a requirement in order to assess their responsiveness to the MSQPT, which assesses items related to activity and participation.

Individuals who presented with an acute exacerbation of MS or severe cognitive change, as well as those who were bedridden with another illness or reported fatigue that prevented them from staying focused for 2 hours or more, were excluded from the study.

Data collection

We chose the Hamburg Quality of Life Questionnaire in Multiple Sclerosis (HAQUAMS) to assess the patients' quality of life because of its high reliability (test-retest and internal consistency), sufficient validity,¹⁵ and good responsiveness, including MID estimates.¹²

At baseline, we recorded each patient's age, gender, type of MS, and year of diagnosis. At baseline and at 3 weeks (inpatients) or 6 months (outpatients), the participants filled out the MSQPT, followed by the HAQUAMS.

Data analysis

The full dataset was analyzed. We did not carry out any sub-group analyses of short- or long-term patients because of the small sample size. We calculated the percentage of missing data, along with statistics that provided a demographic description of the population. We used XLSTAT 2015 (Addinsoft, Paris, France) to analyze the data.

Responsiveness

Responsiveness can be evaluated using either the CoConsensus-based Standards for the selection of health

Measurement Instruments guidelines or a traditional approach.^{16–19} We chose traditional measures because they would allow us to compare our results with those from other MSQPT studies.^{8,9,10} These measures included effect size (ES) and the standardized response mean (SRM), which is considered more informative than the ES because it takes the variability of change into account.^{19,20} ES measures the change that is caused by an intervention as the difference between the mean scores that are obtained during the pre- and post-intervention assessments and that are divided by the SD of the baseline scores. ESs of 0.2, 0.5, and 0.8 were classified as small, medium, and large, respectively.²¹ We provided values for amelioration (positive change) and deterioration (negative change).

The modified SRM (MSRM) uses the same numerator as the ES and SRM, but the denominator is the SD of the change in scores between assessments. This denominator is calculated only for individuals identified as stable. In our study, stable patients were those who had reported no change on the patient-rated Transition Questions 1 and 2 of the HAQUAMS. We used Cohen's rules to appraise the SRM: responsiveness is poor if the SRM is less than 0.5, adequate if it is 0.5–0.8, and excellent if it is 0.8 or more.²² The MSRM provided an estimate of the inherent variability in the changes that were recorded on the patient-rated outcome instrument, with lower scores indicating lower variability.¹⁹ We provided 95% CIs for ES, SRM, and MSRM using the delete-1 jackknife method.²³

Responsiveness can also be studied using the relative efficiency method, which compares the responsiveness of two discrete instruments.¹⁹ Here, we computed the relative efficiency of the instruments in relation to amelioration and deterioration. A relative efficiency of more than 1 indicated that the MSQPT was more responsive than the HAQUAMS, whereas a relative efficiency of less than 1 indicated the opposite.

Minimal important difference

MID can be evaluated using the distribution- or anchor-based approach.^{9,24,25} The distribution-based approach relies on various statistical measures that are based on the distribution of scores in a given sample.^{18,19,24} SD,^{24–28} standard error of measurement (SEM),^{25,29} and minimum detectable change (MDC) at 90% (MDC90) and 95% (MDC95) CIs.^{9,18} When small effects are expected, the SEM is calculated as the SD of patient-reported outcome scores that is multiplied by the square root of the difference between 1 and the intra-class correlation coefficient. By combining distributional and reliability components, the SEM takes random measurement errors into consideration and thus measures response stability. The 1-SEM criterion can be applied to detect intra-individual change.²⁸ We provided CIs for SEM using the delete-1 jackknife method.²³

The MDC provides the smallest amount of change beyond random error for a certain level of confidence and is always higher than the SEM.⁹ In a previous study, which set out to determine the MID of the original German version of the MSQPT,⁹ both approaches were used, although the MIDs were derived mainly using an anchor-based approach. Van der Maas then showed that the SEM and 0.5 SD came close to the anchor-based MID, as indicated by Turner and colleagues.^{9,25}

In the present study, we chose a distribution-based approach to evaluate the MIDs in the French version and used the SEM to estimate the MID and other distribution-based estimates as benchmarks.^{9,24,25,29} We subsequently compared these MIDs with those of the German MSQPT. Although the MIDs in the French version were calculated using a distribution-based approach, the expression *MID* has been used throughout this article for better readability, bearing in mind that only the anchor-based approach can reflect a patient's perspective of what is important.

RESULTS

Demographic data

We used the data from 31 of 32 patients; 1 participant dropped out of the study. A total of 15 patients were receiving short-term rehabilitation as inpatients, and 16 were receiving long-term treatment as outpatients.

To evaluate the extent to which the sample was representative, we compared our population with those used in previous studies in Switzerland: the MSQPT validation study and the Multiple Sclerosis and Rehabilitation, Care and Health Services Research in Europe (MARCH) study (the results are shown in Table 1).^{8,9,30} MARCH was the Swiss contribution to an international research program that was designed to increase our knowledge of the living conditions of people with MS, and it provided a plausible

Table 1 Demographic Data and Comparison with Representative Swiss Studies

| Characteristic | MARCH study (MID = 23; <i>n</i> = 185) | Responsiveness | |
|-----------------------|----------------------------------------------|------------------------------------------|----------------------------------|
| | | German MSQPT (MID = 3; <i>n</i> = 60) | French MSQPT (<i>n</i> = 31) |
| Ratio, women–men | 0.63 | 0.65 | 0.84 (26:5) |
| Age, y, mean (SD) | 50.2 (11.9) | 53.3 (11.4) | 54.39 (11.7) |
| Age, women, mean (SD) | 49.8* | 52.6 (12.5) | 53.46 (11.8) |
| Age, men, mean (SD) | 50.1* | 54.5 (9.0) | 59.20 (11.0) |
| Age, range, min–max | 16–79 | 23–77 | 37–78 |
| Illness, y, mean (SD) | 13* | 18 (9.7) | 15 (8.3) |

* SD is not available.

MARCH = Multiple Sclerosis and Rehabilitation, Care and Health Services Research in Europe; MID = minimal important difference; MSQPT = Multiple Sclerosis Questionnaire for Physiotherapists.

representation of the Swiss population with MS. However, our population was different because the ratio of women (0.84) and the mean age of the men (59.2 y) were higher than in the MARCH study (0.63 and aged 50.1 y, respectively); in addition, it did not include young patients. For these reasons, it did not represent the Swiss population with MS as a whole.

Missing data

We had some missing data—0.20% for the MSQPT and 0.60% for the HAQUAMS.

Responsiveness

The ES and SRM estimates related to negative change (deterioration) and positive change (amelioration) are presented in Table 2. The amelioration ES was large for Items 4 and 9 and also for the Balance section. The ESs for Item 7, the Participation section, and the total score were medium, and the ES for the Activity section was small. The deterioration ES was small for Item 4, the Balance section, and the total score, and the Activity and Participation sections had a medium ES. As expected, the SRM was higher than the ES, except in the case of Item 9 in relation to amelioration.

According to Cohen’s rules,²² the responsiveness of the items, sections, and total score is excellent except in the case of deterioration for Item 4, for which the SRM could not be calculated.

When we compare the results of this study with those of the study of the German MSQPT, we observe that the ESs and SRMs of the French MSQPT (apart from those for Item 4) were similar. The average difference in ESs for all estimates (apart from those for Item 4) was 0.09 for amelioration, in favour of the German version, and -0.09 for

deterioration, in favour of the French version. The average difference in SRMs was -0.12 for deterioration, in favour of the German version, and 0.07 for amelioration, in favour of the French version.

Table 2 also shows the results for the MSRM, which should be as low as possible. It was evaluated using stable patients. We observed a low MSRM for Item 7B, the Activity and Balance sections, and the total score. The Activity section had the lowest MSRM in absolute terms, whereas Items 4, 7A, and 9 had higher MSRMs that indicate a higher inherent variability. These results assume that when people are stable, a change in score may not be expected for Item 7B, the Activity and Balance sections, and the total score.

Tables 3 and 4 present the relative efficiency of the French MSQPT. A score of more than 1 indicates the superiority of the MSQPT in measuring change. Items 7A and 7B seemed more efficient in detecting change than the correlated item “lower limb mobility.” Generally, the results showed that the Activity section was better at indicating amelioration but worse at indicating deterioration, whereas the Participation section demonstrated amelioration better than the HAQUAMS, but deterioration worse. The total MSQPT scores described aspects similar to the correlated HAQUAMS scores. Overall, the MSQPT performed better at indicating amelioration but worse at indicating deterioration than the HAQUAMS.

Direct comparison of responsiveness between the French and German versions of the questionnaire using the relative efficiency method revealed more information about the responsiveness of the French MSQPT.

With respect to amelioration, the items and sections of the French MSQPT seemed more efficient than

Table 2 ES and SRM for Amelioration and Deterioration, and MSRM, Reported with 95% CI

| | Item no. | | | | Section | | | |
|----------------------|---------------|-------------------------|-------------------------|---------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | 4 (showering) | 7A (walking distance) | 7B (walking time) | 9 (getting in and out of a car) | Activity | Participation | Balance | Total score |
| Amelioration | | | | | | | | |
| ES | 1.11* | 0.78* | 0.78 (0.77, 1.04) | 1.23 (0.80, 1.71) | 0.42 (0.39, 0.45) | 0.55 (0.51, 0.58) | 1.17 (1.09, 1.39) | 0.61 (0.55, 0.67) |
| SRM | 1.11* | 2.70* | 2.69 (2.67, 2.77) | 1.08 (0.89, 1.36) | 1.57 (1.51, 1.67) | 1.33 (1.27, 1.40) | 1.20 (1.12, 1.53) | 1.31 (1.26, 1.41) |
| Deterioration | | | | | | | | |
| ES | -0.29* | -0.93 (-0.95, -0.81) | -0.93 (-1.01, -0.76) | † | -0.55 (-0.69, -0.52) | -0.75 (-1.12, -0.68) | -0.44 (-0.66, -0.41) | -0.41 (-0.49, -0.37) |
| SRM | † | -1.77 (-1.82, -1.69) | -2.14 (-2.66, -1.98) | -0.89 (-2.31, -0.85) | -2.08 (-2.35, -1.95) | -1.57 (-1.90, -1.47) | -1.90 (-1.99, -1.76) | -1.50 (-1.68, -0.57) |
| MSRM | 0.27* | 0.31 (0.22, 0.49) | -0.06 (-0.16, 0.10) | -0.27 (-0.28, -0.21) | -0.03 (-0.21, 0.26) | -0.19 (-0.31, 0.20) | -0.07 (-0.30, 0.28) | -0.08 (-0.23, 0.26) |

* 95% CI incalculable.

† Not measurable (n = 1).

ES = effect size; SRM = standardized response mean; MSRM = modified standardized response mean; MDC = minimum detectable change.

Table 3 Relative Efficiency for Amelioration between MSQPT and HAQUAMS, for All Combinations of Sections Measuring Similar Aspects and Having a Correlation Greater than 0.4

| HAQUAMS | MSQPT | | | | |
|---------------------|-----------------------|-------------------|----------|---------------|-------------|
| | 7A (walking distance) | 7B (walking time) | Activity | Participation | Total score |
| Fatigue or thinking | * | * | * | 3.23 | * |
| Lower limb mobility | 1.87 | 1.27 | 0.99 | 3.79 | 1.72 |
| Upper limb mobility | * | * | 1.10 | 1.89 | 1.91 |
| Social functioning | * | * | * | 0.79 | * |
| Mood | * | * | * | 0.83 | 0.84 |
| Total score | * | * | 2.06 | 3.54 | 3.58 |

* Sections do not describe similar aspects.

MSQPT = Multiple Sclerosis Questionnaire for Physiotherapists; HAQUAMS = Hamburg Quality of Life Questionnaire in Multiple Sclerosis.

Table 4 Relative Efficiency for Deterioration between MSQPT and HAQUAMS for All Combinations of Sections Measuring Similar Aspects and Having a Correlation >0.4

| HAQUAMS | MSQPT | | | | |
|---------------------|-----------------------|-------------------|----------|---------------|-------------|
| | 7A (walking distance) | 7B (walking time) | Activity | Participation | Total score |
| Fatigue or thinking | * | * | * | 0.30 | * |
| Lower limb mobility | 0.99 | 1.12 | 0.32 | 0.73 | 0.28 |
| Upper limb mobility | * | * | 0.35 | 0.79 | 0.31 |
| Social functioning | * | * | * | 2.06 | * |
| Mood | * | * | * | 0.54 | 0.21 |
| Total score | * | * | 0.39 | 0.89 | 0.34 |

* Sections do not describe similar aspects

MSQPT = Multiple Sclerosis Questionnaire for Physiotherapists; HAQUAMS = Hamburg Quality of Life Questionnaire in Multiple Sclerosis.

those of the French HAQUAMS. In particular, the total MSQPT score appeared to be more efficient than the total HAQUAMS score, more efficiently describing positive changes in quality of life.

The relative efficiency of the French MSQPT versus the French HAQUAMS was considerably higher (on average, 1.0) than that of the German MSQPT versus the German HAQUAMS,⁹ thereby confirming that the French MSQPT was more responsive to amelioration.

In the case of deterioration, sections of the French HAQUAMS seemed more efficient than those of the French MSQPT. When we compared the relative efficiency of the German MSQPT and the French MSQPT against the HAQUAMS, the relative efficiency of the French MSQPT (deterioration) was considerably lower (on average, -1.2).⁹ Thus, except for Items 7A and 7B, the responsiveness (for deterioration) of the French MSQPT in relation to the French HAQUAMS is lower.

Minimal important difference

Table 5 shows the MID distribution-based estimates and the original German MID, expressed as integers. The SDs and SEMs for Items 7A and 7B were all less than 1, the lowest possible integer MID. The MIDs for Items 4 and 9 were between 1 and 2.

The estimates ranged between 7 and 20 for the Activity section. Its SDs and SEM estimates were between the boundaries set by the German MID for amelioration and deterioration. The Participation section estimates were between 6 and 24, and the SEM and SDs were considerably lower than those for the German MID. The Balance section estimates ranged between 1 and 6 and had SEMs and SDs that were lower than 3, the German MID for deterioration. Moreover, the estimated total scores ranged from 13 to 19, showing that the SDs and SEMs were lower than the lowest German MID. The MDC estimates were all higher than the SEM and SD estimates.

The SEMs for Items 7A, 7B, 9, the total score, and the Participation section were lower than those of the German MIDs, whereas those for the Activity and Balance sections were similar. The SEM for Item 4 did not match the SEM of the German version (0.67);³ it was slightly higher than the German MIDs.

DISCUSSION

The main findings of the present study are as follows: Items 7A and 7B and all sections of the French version of the MSQPT were almost as responsive as their counterparts in the German version, albeit in different ways.

Table 5 Distribution-Based Estimates

| Estimate | Item (MID of the German MSQPT) | | | | | | | Total score (20, 18) |
|-------------------|--------------------------------|---------------------------------|-----------------------------|-------------------------------------------|---------------------|---------------------------|-------------------|-------------------------|
| | 4 (showering) (1, 1) | 7A (walking distance) (1, 1) | 7B (walking time) (1, 1) | 9 (getting in and out of a car) (2, 2) | Activity (7, 11) | Participation (17, 17) | Balance (2, 3) | |
| 0.33 SD | 0.78 | 0.54 | 0.60 | 0.76 | 6.82 | 5.50 | 1.07 | 13.03 |
| 0.5 SD | 1.16 | 0.80 | 0.89 | 1.14 | 10.13 | 8.25 | 1.60 | 19.55 |
| SEM | 1.19 | 0.80 | 0.79 | 1.72 | 7.05 | 8.46 | 2.13 | 16.99 |
| (95% CI) | (0.83, 1.22) | (0.73, 0.82) | (0.74, 0.80) | (1.26, 1.75) | (6.48, 7.05) | (8.42, 9.21) | (1.28, 2.18) | (16.60, 17.60) |
| MDC ⁹⁰ | 2.77 | 1.88 | 1.84 | 4.01 | 16.45 | 19.74 | 4.97 | 39.66 |
| MDC ⁹⁵ | 3.30 | 2.23 | 2.19 | 4.77 | 19.53 | 23.45 | 5.90 | 47.11 |

MID = minimal important difference; MSQPT = Multiple Sclerosis Questionnaire for Physiotherapists; SEM = standard error of measurement; MDC⁹⁰ = minimum detectable change at 90% CI; MDC⁹⁵ = minimum detectable change at 95% CI.

The MID of the German version matched the distribution-based MID of the French version for Items 7A, 7B, and 9 and all sections.

The main findings must be evaluated against the main limitations of the study – that is, the small and non-representative sample size. This study aimed to provide some indication of whether the French MSQPT had the same responsiveness as the original German MSQPT and the same MID values, which may be used as a threshold for change in daily physiotherapeutic practice when the results permit it.

Responsiveness

The overall results for the ES, SRM, and MSRM indicate that Items 7A, 7B and 9 and all sections of the French version of the MSQPT were responsive.

Responsiveness depends on the population and setting; therefore, it is difficult to compare among studies. However, other studies in a population with MS, using patient-reported questionnaires, can put the results of this study into perspective. In the article by Hobart and colleagues,³¹ the responsiveness of the Multiple Sclerosis Impact Scale (MSIS–29) was described. The authors reported an ES of 0.64 for the MSIS–29 Physical scale and an ES of 0.44 for the MSIS–29 Psychological scale. In this study, the ESs of the Activity (–0.55, 0.42) and Participation (–0.75, 0.55) sections and the total score (–0.41, 0.61) are comparable to the ESs of the MSIS–29. The absolute values of the SRM in this study are 0.89 or more and exceed the SRM values for the MSIS–29's Physical (0.66) and Psychological (0.54) scales.

In the same study, Hobart and colleagues reported the ES (0.45) and SRM (0.35) for the Physical scale as well as the ES (0.31) and SRM (0.48) for the Mental Health scale of the 36-item Short Form Health Survey.³¹ The Physical scale is highly correlated ($r = 0.85$) with the Activity section of the MSQPT,⁸ which has similar ESs (–0.55, 0.42) but a higher SRM (–2.09, 1.57). The Mental Health scale is moderately correlated ($r = 0.6$) with the Participation section of the MSQPT,⁸ which has larger ESs (–0.75, 0.55) and a higher

SRM (–1.57, 1.33). We conclude that the responsiveness of the French MSQPT is at least similar to the responsiveness of other questionnaires that have been used to assess health status and activity in people with MS.

French versus German MSQPT

We found small differences between the French and the German studies. They may reflect our small sample size, which made this analysis somewhat susceptible to outliers, and the non-representative population of this study. The French study and the representative German study had different populations (see Table 1). The ratio of women (0.84) and the mean age of men (59.2 y) were higher for the French study than for the German study (0.65 and 54.5 y, respectively).

Differences in therapy settings may also play a role. In routine inpatient rehabilitation settings, patient characteristics tend to differ substantially from the general population with MS in outpatient clinics, mainly due to the much larger proportion of patients with progressive multiple sclerosis (PMS).¹³ Patients with PMS have higher levels of disability, which might affect the psychometric properties of outcome measures.^{31–34} The German study did not include participants undergoing inpatient rehabilitation, whereas almost 50% of the participants in the present study were being treated in an inpatient rehabilitation centre.

The underlying concept of response stability in questionnaires and their reliability is that people answer a set of items in a similar way.³⁵ Most items on the MSQPT relate to everyday activities and participation and are answered against the background of patients' specific activities and participation. Almost 50% of the participants rated themselves again after 3 weeks of inpatient stationary rehabilitation, but they had not experienced the changes in activities and participation that they would have experienced had their rehabilitation occurred in an outpatient setting. Without being immersed in everyday life, it is difficult to appraise the questions, and this may result in less valid answers.

These reasons may explain the small differences in responsiveness between the French and the German MSQPT.

MSQPT versus HAQUAMS

Summarizing the evaluations of responsiveness, we conclude that Items 7A, 7B, and 9 (for amelioration) and all sections of the French version of the MSQPT were not just responsive, they were almost as responsive as those of the German version, albeit in different ways. The differences are likely to reflect the differences in sample size, population, and therapy setting, as discussed earlier.

When the effect of a physiotherapeutic intervention must be measured and amelioration is expected, the French MSQPT is likely to be superior to the French HAQUAMS and thus a better choice. In relation to Items 4 and 9 (for deterioration), more information is needed to draw an overall conclusion about responsiveness.

French versus German MID estimates

The MID estimates of the German MSQPT may also be used for the French MSQPT. The SEMs for items and sections of the French MSQPT were mainly below the MID of the German version, with the exception of Item 4. The 0.5 SD provided similar results for most estimates. Because the SEM and 0.5 SD came close to anchor-based estimates,^{9,27,28} the MID of the German MSQPT could be used as the MID for items and sections of the French version, excluding Item 4.

The MID for the participation section of the German MSQPT was considerably higher than the SEM and 0.5 SD.⁹ This was also the case for the French SEM and 0.5 SD estimates. Van der Maas has discussed all findings related to the participation section of the German MSQPT in detail,⁹ concluding that a higher MID is a cautious and reasonable choice. For the same reason, a higher MID for the French MSQPT represents a cautious but reasonable choice.

Item 4 of the French MSQPT showed poor responsiveness for deterioration and had a high MSRM. Further studies should examine the responsiveness of this item.

Summary

The present study suggests that the French MSQPT is a responsive instrument. Moreover, it described positive changes in quality of life more efficiently than the French HAQUAMS. The present study also suggests that the German MID estimates can be used for the French version. As long as further information about the performance of the MID does not contradict these findings, we propose to use these MIDs (except the MID for Item 4) as thresholds for change in physiotherapeutic interventions in MS.

The MSQPT can detect small changes on its 9- and 10-point answer scales; this is particularly important for evaluating small changes in physiotherapeutic treatment. Moreover, the MID estimates for Items 7A and 7B on one

level correlate to a 10% change. A 10% clinical threshold for change is low; in contrast, Learmonth and colleagues reported a change of 11%–57% for the 6-minute walk test and timed 25-foot walk test and a 27%–81% change for the Multiple Sclerosis Walking Scale.³² The MID of the MSQPT sections represented a change of 5.4%–17.2% of the maximum value.⁹ The low MIDs make the MSQPT a very promising instrument for evaluating the small changes in activities and participation of people with MS that occur as a result of physical therapy treatment.

Our study had a couple of limitations. First, the patient sample was not representative, and the sample size was small, thereby limiting the significance of our results. Second, the differences in population and therapy settings meant that there was not a true comparison between the German and the French studies. Finally, our study population included patients who were treated at inpatient rehabilitation centers, which was not the case in the German study.

CONCLUSION

The French MSQPT appears to be a responsive measurement tool, with MID estimates that are similar to those of the original German MSQPT. However, differences between the two versions do exist; these may reflect differences in patient populations and therapy settings. The MID estimates for the three MSQPT items and the sections are low and may be used as clinical thresholds that indicate change in physiotherapeutic interventions in MS.

Further research is needed to confirm the results of this study because the sample size was relatively small. The data from future studies will enable us to understand how the proposed thresholds perform in detecting change in different settings.

KEY MESSAGES

What is already known on this topic

The French Multiple Sclerosis Questionnaire for Physiotherapists (MSQPT) is the transcultural translated version of the original German MSQPT that was developed by the Swiss Specialized Group for Physiotherapy in Multiple Sclerosis. The MSQPT is a patient-reported outcome questionnaire that is used for the evaluation of the physiotherapeutic treatment of persons with multiple sclerosis. The French MSQPT has a good to high reliability and sufficient validity.

What this study adds

The French MSQPT appears to be responsive, with low minimal important difference (MID) estimates, which may be used as clinical thresholds that indicate change. Responsiveness and MID estimates are similar to those of the original German MSQPT. The differences may be caused by different populations and therapy settings.

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