The assessment of depression in people with multiple sclerosis: a systematic review of psychometric validation studies

HIND, Daniel, KAKLAMANOU, Daphne, BEEVER, Dan, WEBSTER, Rosie, LEE, Ellen, BARKHAM, Michael and COOPER, Cindy L

Available from Sheffield Hallam University Research Archive (SHURA) at:
http://shura.shu.ac.uk/13407/

This document is the author deposited version. You are advised to consult the publisher's version if you wish to cite from it.

Published version

HIND, Daniel, KAKLAMANOU, Daphne, BEEVER, Dan, WEBSTER, Rosie, LEE, Ellen, BARKHAM, Michael and COOPER, Cindy L (2016). The assessment of depression in people with multiple sclerosis: a systematic review of psychometric validation studies. BMC Psychiatry, 16, p. 278.

Copyright and re-use policy

See http://shura.shu.ac.uk/information.html
Appendix A.

Figure 1: Flow Diagram of Study Selection

- Records identified through database searching (n = 433)
- Additional records identified through other sources (n = 5)

Records after duplicates removed (n = 389)

- Records screened (n = 389)
- Records excluded (n = 349)

Full-text articles assessed for eligibility (n = 40)

- Studies included in qualitative synthesis (n = 21)

Full-text articles excluded, with reasons (n = 19)

- Doesn't assess depression (7)
- Doesn't assess validation measure of depression in MS (4)
- Review/narrative (3)
- Not a validation study (2)
- Sample not solely MS patients (2)
- Measure was not self-report (1)
Appendix B.

Studies Excluded at Full Text Screening, With Reasons

| Authors (Date)                                      | Reason for Exclusion                        |
|-----------------------------------------------------|---------------------------------------------|
| Quaranta et al. (2012)[1]                           | Measure was not self-report                 |
| Knox (2010)[2]                                      |                                             |
| Manoj & Sivan (2007)[3]                             | Review/narrative                            |
| Nocentini (2006)[4]                                 |                                             |
| Doward et al. (2009)[5]                             |                                             |
| Fishman et al. (2004)[6]                            |                                             |
| Groom et al. (2003)[7]                              |                                             |
| McGuigan & Hutchinson (2004)[8]                     | Doesn’t assess depression                   |
| Mueller & Girace (1988)[9]                          |                                             |
| O’Brien et al. (2007)[10]                           |                                             |
| Schwartz et al. (2011)[11]                          |                                             |
| Cook et al. (2012)[12]                              |                                             |
| Gold et al. (2003)[13]                              | Doesn’t assess validation of depression measure in MS |
| Horton et al. (2010)[14]                            |                                             |
| Provinciali et al. (1999)[15]                        |                                             |
| Alajbegovic et al. (2009)[16]                        | Not a validation study                      |
| Good et al. (1992)[17]                              |                                             |
| Leon et al. (2001)[18]                              | Sample not solely PwMS                      |
| Lykouras et al. (1998)[19]                          |                                             |
Depression assessment in multiple sclerosis

Appendix C.

**Study Characteristics**

| Authors (Date), Country | Samples | Baseline Characteristics | MS Diagnosis (years) | Disability Status | Recruitment Method | Measures | Validity/ Reliability Tested |
|-------------------------|---------|--------------------------|----------------------|-------------------|-------------------|---------|-----------------------------|
| Aikens et al. (1999)[20], USA | MS=105, Depressed=34, Healthy=80, Diabetes=71, Chronic Pain=80 | MS: $M_{age} = 41.9 (SD = 9.0),$ 63% female; Depressed: $M_{age} = 39.3 (SD = 14.6),$ 65% female; Healthy controls: $M_{age} = 34.4 (SD = 8.3),$ 50% female; Diabetes: $M_{age} = 55.9 (SD = 16.7),$ 56% female; Chronic pain: $M_{age} = 45.0 (SD = 13.9),$ 56% female | $M = 11$ years | Expanded Disability Status Scale = 0.0 - 7.5 (Median = 3.8) | University Hospital | BDI-II | Construct validity; content validity; internal reliability (cronbach's alpha) |
| Amtmann et al. (2014)[21], USA | MS = 455 | $M_{age} = 52.9 (SD = 10.8);$ 83% female ($N = 377)$ and 17% male ($N = 78); | $M = 14.5 (SD = 10)$ | Moderate level | University Hospital/ National Multiple Sclerosis Society charter | CESD-10, PHQ-9, PROMIS-D-8 | Evaluation of dimensionality; inter-item correlation; discriminant/convergent validity |
## Depression assessment in multiple sclerosis

| Authors (Date), Country | Samples | Baseline Characteristics | MS Diagnosis (years) | Disability Status | Recruitment Method | Measures | Validity/ Reliability Tested |
|------------------------|---------|--------------------------|----------------------|-------------------|--------------------|---------|-----------------------------|
| Avasarala et al. (2003)[22], USA | MS=120 | Ages: 20-29 N=6, 30-39, N=25, 40-49 N=53, 50-59, N=32, 60-69 N=4; 71% female | NA | NA | University Hospital | YSQ | Criterion validity |
| Beeney and Arnett (2008)[23], USA | 3 year follow-up MS=52; cross-sectional analysis, MS=96. | \( N=52: M_{\text{age}}=46.57 (SD=7.61); \) \( N=96: M_{\text{age}}=47.41 (SD=8.98). \) \( M (T1) =14.04 (SD = 9.37); M (T2) = 16.87 (SD = 9.24) \) | EDSS (T1) =4.55 (SD = 1.44); EDSS (T2) = 4.71 (SD = 1.61) | University Hospital/ National Multiple Sclerosis Society charter | CMDI | Construct validity |
| Benedict et al. (2003)[24], USA | MS=54 | \( M_{\text{age}}=42.8 (SD=9.7), 79% female \) | NA | EDSS median = 2.5 (R = 0.0 - 7.0) | University Hospital | BDI-FS | Criterion and construct validity |
## Depression assessment in multiple sclerosis

| Authors (Date), Country | Samples | Baseline Characteristics | MS Diagnosis (years) | Disability Status | Recruitment Method | Measures | Validity/ Reliability Tested |
|-------------------------|---------|--------------------------|----------------------|-------------------|-------------------|----------|-----------------------------|
| Chang et al. (2003)[25], USA | MS\(=433\); plus 'standardisation sample' \(n=420\) | MS: \(M_{age}=45.0\) (SD=10.0), 69.4% female; Standardisation sample described in Nyenhuis et al. (1998)[26]: \(M_{age}=43.1\) | NA | NA | University Hospital | CMDI | Content validity, internal reliability, construct validity |
| Honarmand and Feinstein (2009)[27], Canada | Study 1: MS=140; Study 2: MS=40, MD=21, Matched controls (no MD) = 19 | \(M_{age}=44.6\) (SD=10.3), 75% female | \(M = 8.8\) (SD = 6.8) | EDSS = 4.0 (SD = 2.34) | Hospital | HADS | Criterion validity |
| Mohr et al. (1997)[28], USA | MS \(=184\), DEP \(=72\), controls (college students) = 555 | MS: \(M_{age}=44.0\), 68% female; DEP: \(M_{age}=47.5\), 51% female; Controls: \(M_{age}=20.2\), 55% | NA | NA | University Hospital | BDI | Face validity |
Depression assessment in multiple sclerosis

| Authors (Date), Country | Samples | Baseline Characteristics | MS Diagnosis (years) | Disability Status | Recruitment Method | Measures | Validity/Reliability Tested |
|-------------------------|---------|--------------------------|----------------------|-------------------|-------------------|---------|---------------------------|
| Mohr et al. (2007)[29], USA | MS = 260 | $M_{age} = 51$ (SD=10.5), 73% female | $M = 19$ (SD = 10.5) | NA | University Hospital | Two-item measure | Criterion validity, construct validity |
| Moran and Mohr (2005)[30], USA | MS (with depression)=42 | $M_{age} = 43.0$ (SD=10.3), 69% female | $M = 6.6$ (SD = 6.1) | NA | University Hospital/ referrals/ National Multiple Sclerosis Society Charter | BDI | Construct validity |
| Nicholl et al. (2001)[31], UK | MS=88 | $M_{age} = 48.97$ (SD=8.9), 75% female | $M = 11.8$ (SD = 7.5) | NA | Hospital/Rehabilitation ward | HADS | Criterion validity, construct validity |
| Nyenhuis et al. (1995)[32], USA | MS=84, DEP=101, controls (MS matched)=87 | MS: $M_{age} = 49.3$ (SD=11.1), 75% female; DEP: $M_{age} = 50.5$ (SD=10.7), 65% female; Controls: $M_{age} = 49.6$ (SD=11.6), 75% female | NA | EDSS = 4.74 (SD = 3.6) | Community based | BDI, MDI | Construct validity |
## Depression assessment in multiple sclerosis

| Authors (Date), Country | Samples | Baseline Characteristics | MS Diagnosis (years) | Disability Status | Recruitment Method | Measures | Validity/ Reliability Tested |
|-------------------------|---------|--------------------------|----------------------|-------------------|-------------------|----------|-------------------------------|
| Pandya et al. (2005)[33], Canada | MS=47 | $M_{age}=39.3$ (range 18-56), 72.3% female | NA | EDSS = 3.0 | University hospital/referrals to Psychiatric care | CES-D | Criterion validity, construct validity |
| Patten et al. (2005)[34], Canada | MS=567 | $M_{age}=48$ (Range 19-76), 75.7% female | NA | NA | University Hospital | CES-D | Construct validity |
| Patten et al. (2010)[35], Canada | year 0 $N$=1670; year 1; $N$=1336; year 2; $N$=648, year 3 $N$=186 | 15.9% aged 18-34, 29.5% aged 35-44, 33.6% aged 45-54, 21.0% aged 55+; 77.1% female | NA | EDSS (mode) = 4 ($R = 4.8$) | University Hospital | CES-D | Test-retest reliability |
| Sjonnesen et al. (2012)[36], Canada | MS=173, Controls (general population)=3304 | $M_{age}=52.9$ (95%CI 51.2-54.6), 74.6% female; Controls: $M_{age}=44.4$ (95%CI 44.0-44.8), 67.7% female | $M = 14.4$ (95%CI = 13-15.8) | 27.1% (46/170) unable to work | Patient Registry/Hospital | PHQ-9 | Content validity, construct validity, internal reliability |
## Depression assessment in multiple sclerosis

| Authors (Date), Country | Samples | Baseline Characteristics | MS Diagnosis (years) | Disability Status | Recruitment Method | Measures | Validity/ Reliability Tested |
|-------------------------|---------|--------------------------|----------------------|------------------|-------------------|----------|-------------------------------|
| Solari et al. (2003)[37], Italy | MS=213, Healthy controls (matched to MS)=213, DEP=32 | MS: $M_{age}=38$ (SD=9.2), 66% female; DEP: $M_{age}=51.8$ (SD=14.15), 78% female; Healthy controls: $M_{age}=38.3$ (SD=9.4), 55.9% female. | $M=9.1$ (SD = 6.9) | EDSS = 2.9 (SD = 1.6) | University Hospital | CMDI | Internal reliability, test-retest reliability, content validity, construct validity, criterion validity |
| Strober and Arnett (2010)[38], USA | MS-DEP=17, MS-NON=67, healthy controls=22 | MS-DEP: $M_{age}=45.24$ (SD=8.39), 82% female; MS-NON: $M_{age}=47.93$ (SD=9.30), 84% female; Controls: $M_{age}=46.18$ (SD=13.36), 82% female. | $M$ depressed - 10.59 (SD = 6.42) | EDSS depressed = 5.18 (SD = 1.5) | National Multiple Sclerosis Society charter | mBDI | Construct validity |
| Sullivan et al. (1995)[39], Canada | MS=46 | $M_{age}=34.4$, 78% female | NA | NA | Hospital/ referrals | BDI | Criterion validity, construct validity |
| Authors (Date), Country | Samples | Baseline Characteristics          | MS Diagnosis (years) | Disability Status | Recruitment Method | Measures | Validity/ Reliability Tested |
|-------------------------|---------|-----------------------------------|----------------------|-------------------|-------------------|----------|-----------------------------|
| Vahter et al. (2007)[40], Estonia (from Manoj and Sivan, 2007[3]) | MS=134 | $M_{age}=43.8 \ (SD=12.4)$, 73.9\% female | $M = 9.9 \ (SD = 8.5)$ | EDSS = 5.8 \ (SD = 2.5) | Hospital | One-item measure | Criterion validity |
| Verdier-Taillefer et al. (2001)[41], France | MS=857, GP patients=1598, healthy workers=403 | MS: $M_{age}=47.0 \ (SD=7.2)$, 63.2\% female; GP patients: $M_{age}=44.6 \ (SD=8.8)$, 59.1\% female; Healthy workers: $M_{age}=42.9 \ (SD=6.3)$, 55.3\% female | NA | NA | CES-D | Content validity, internal reliability, construct validity |

Note: MS=Multiple Sclerosis, MD=Major Depression, DEP=Depressed, NA = Not Available