

Self-declared non-motor symptoms profiles amongst Parkinson's disease patients of the Asian subcontinent

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BACKGROUND and OBJECTIVE

Ethnic differences in Parkinson's disease (PD) have been reported for decades. Currently, we are conducting an observational, prospective, longitudinal, multicentre study analysing the non-motor symptoms (NMS) profiles in different ethnic groups (Sauerbier et al., 2015, 2016). Our preliminary results confirm that the NMS profiles might be different between white Caucasian (WC) and Asian patients with PD. The aim of this review was to analyse all studies accessed using pubmed, addressing NMS in Asian population (WHO criteria) applying the self-completed NMS Questionnaire (NMSQuest) and the NMS Scale (NMSS).

METHODS

- In accordance with PRISMA guidelines (2009), an extensive literature search was carried out on 17th August 2016 using the advanced search builder for all fields on the PubMed database, covering all articles published before that date.
- For each individual search three Medical Subject Headings terms in all fields were used (Moher et al., 2009).
- 1823 articles were identified of which 35 duplicates were removed.
- Abstracts were screened against inclusion criteria (to be available as a full article in English, to be original research papers, to study human subjects within a real-life PD population and to not look at a specific subgroup within PD, to give percentages of NMSQuest or NMSS and not to include mixed ethnic groups).
- 25 articles were included (12 applying the NMSQuest and 13 applying the NMSS)

Table 1: The most (>60%) and least (<40%) frequently self-reported NMS on the NMS Questionnaire

Country	China	China	China	China	China	China	China	Korea	Thailand	Taiwan	Turkey	India
Authors /Year	Yu et al, 2010	Wang et al, 2010	Zhou et al, 2013	Gan et al, 2014	Da-Wei Li et al, 2015	Zhang et al, 2015	Hui-Juan Li et al, 2015	Cheon et al, 2008	Vongvaivanich et al, 2014	Liu et al, 2015	Sengul et al, 2015	Rukmini Mridula et al, 2015
1 st most frequently reported NMS (%)	Nocturia (77.1)	None available	Constip (64.8)	Memory impair (65.8)	None available	Memory impair (68.6)	Memory impair (95.1)	Nocturia (67.6)	Nocturia (64.2)	Nocturia (62.9)	Memory impair (87.0)	Weight change (83.0)
2 nd most frequently reported NMS (%)	Constip (70.0)	None available	Memory impair (63.0)	Constip (64.6)	None available	None available	Nocturia (86.6)	RLS (66.7)	Orthost dizziness (60.6)	None available	Nocturia (82.6)	RLS (77.3)
3 rd most frequently reported NMS (%)	Depression (67.8)	None available	Nocturia (61.7)	Nocturia (61.4)	None available	None available	Intense vivid dreams (82.9)	Constip (65.8)	None available	None available	Constip (73.9) Concentr (73.9)	Constip (71.7)
1 st least frequently reported NMS (%)	Sex drive (10.0)	Bowel incont (0.9)	Bowel incont (2.6)	Bowel incont (0.6)	Bowel incont (3.3)	Delusions (4.5)	Bowel incont (2.4)	Bowel incont (5.4)	Bowel incont (13.9)	Bowel incont (3.9)	Bowel incont (0.0)	Delusions (1.9)
2 nd least frequently reported NMS (%)	Bowel incont (11.1)	Vomiting (2.7) Falling (2.7) Delusions (2.7)	Delusions (4.3)	Diplopia (5.7)	Delusions (6.4)	Bowel incont (5.1)	Falling (6.1)	Delusions (8.3)	Weight change (15.2)	Delusions (6.2)	Delusions (3.3)	Sweating (5.6) Sex drive (5.6)
3 rd least frequently reported NMS (%)	Hallucinat (14.4)	Sex drive (7.2) Sex difficulty (7.2)	Diplopia (5.7)	Swelling of legs (8.2) Vomiting (8.2)	Hallucinat (10.7)	Vomiting (14.6)	Swelling of legs (7.3)	Hallucinat (17.6)	Intense vivid dreams (16.4) Delusions (16.4)	Sweating (10.5)	Dribbling (16.1)	Intense vivid dreams (7.5) Taste/smell (7.5)

NMS = Non Motor Symptoms; NMSQuest = NMS Questionnaire; incont = incontinence; RLS = Restless Legs Syndrome; Constip = Constipation; Memory impair = Memory impairment; Orthost = Orthostatic; Concentr = Concentration; Hallucinat = Hallucinations

Table 2: The most (>60%) and least (<40%) frequently self-reported NMS on the NMS Scale

Country	Southwest China	Southwest China	Southwest China	Southwest China	West China	West China	West China	Korea	Korea	South Korea	Singapore	Egypt	India
Authors /Year	Guo et al, 2013a	Guo et al, 2013b	Song et al, 2014	Zhang et al, 2016	Ou et al, 2016a	Ou et al, 2016b	Wu et al, 2016	Kim et al, 2009	Kim et al, 2014	Kim et al, 2013	Yong et al, 2013	Khedr et al, 2012	Krishnan et al, 2011
1 st most prevalent NMS domain (%)	Sleep/ Fatigue (76.5)	Sleep/ Fatigue (77.3)	Sleep/ Fatigue (79.8)	Sleep/ Fatigue (83.2)	Sleep/ Fatigue (89.7)	Sleep/ Fatigue (88.9)	Sleep/ Fatigue (79.7)	Urinary (86.9)	Mood/ Apathy (81.7)	Sleep/ Fatigue (89.3)	Sleep/ Fatigue (83.9)	GIT (90.9)	Sleep/ Fatigue (89.7)
2 nd most prevalent NMS domain (%)	Attention/ memory (67.8)	Attention/ memory (68)	Attention/ memory (69.8)	Misc (68.5)	Attention/ memory (83.3)	Misc (77.8)	Mood/ Apathy (67.1)	Attention/ memory (86.6)	Sleep/ Fatigue (80.0)	Sexual problems (84.7)	Attention/ memory (69.9)	Sleep/ Fatigue (84.8) Mood/ Apathy (84.8)	Mood/ Apathy (88.5)
3 rd most prevalent NMS domain (%)	Mood/ Apathy (65.1)	Misc (62.7)	Mood/ Apathy (65.7)	Mood/ Apathy (67.1) Attention/ memory (67.1)	Urinary (71.8)	Mood/ Apathy (66.7)	Attention/ memory (63.1)	Mood/ Apathy (82.6)	Misc (72.8)	Attention/ memory (81.7)	Mood/ Apathy (68.6)	Cardiov (79.8)	Misc (80.5)
1 st least prevalent NMS domain (%)	Percep (19.2)	Percep (18.7)	Percep (17.6)	Percep (14.5)	Percep (23.9)	Cardiov (18.5) Percep (18.5)	Percep (10.0)	Percep (0)	Sexual problems (20.0)	Percep (32.1)	Percep (17.3)	Percep (3.0)	None available
2 nd least prevalent NMS domain (%)	Sexual problems (25.1)	Cardiov (26)	Cardiov (26.7)	Cardiov (27.1)	Cardiov (29.9)	None available	Cardiov (22.3)	Cardiov (8.7)	Percep (23.9)	None available	Cardiov (27.1)	None available	None available
3 rd least prevalent NMS domain (%)	Cardiov (26.6)	Sexual problems (27.3)	Sexual problems (28.6)	None available	None available	None available	Sexual problems (29.2)	Sexual problems (21.7)	Cardiov (37.2)	None available	None available	None available	None available

NMS = Non Motor Symptoms; NMSS = NMS Scale; GIT = Gastro Intestinal Tract; Misc = Miscellaneous; Cardiov = Cardiovascular; Percep = Perception

RESULTS

- NMS are reported as highly prevalent within Asian patients with PD, concordant with previous work on ethnic minority groups conducted in Asian and European countries.
- Symptoms of constipation, memory impairment and nocturia appear to be most frequently self-reported by Asian patients using the NMS Questionnaire.
- The domains sleep/fatigue, attention/memory and mood/apathy appear to be the most prevalent NMS among Asian patients on the NMSS.
- Symptoms of bowel incontinence, delusions and impaired sex drive appear to be least frequently reported by Asian patients.

CONCLUSIONS

The current knowledge regarding expression of NMS among different ethnic groups within Asia is not well developed and the review reports a high self-reporting of NMS as well as overall occurrence.

- Currently, there are no systematic reviews or studies considering NMS burden which can be assessed by the NMS Questionnaire or NMSS using validated cut-off scores.
- The cited studies vary widely in methodology and sample characteristics and are mostly single centered and non-controlled.
- In addition, ethnicity-profiling methods are also unclear in many studies.
- There is a clear unmet need to further explore the impact of ethnicity on PD.



Figure 2: Map of countries in which studies using Non motor symptoms (NMS) Scale and NMS Questionnaire (NMSQuest) have been conducted. Some locations have more than one study completed there

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