Associations between lifestyle recommendation adherence, quality of life and symptom management in a cross-sectional sample of people with multiple sclerosis

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Background

Multiple sclerosis (MS) is a chronic autoimmune disease affecting the brain and spinal cord, impacting approximately 2.9 million people worldwide. The disease is characterised by an unpredictable clinical course and a substantial symptom burden, including fatigue, pain, cognitive difficulties, mobility impairment, and mood disturbances, all of which contribute to reduced quality of life (QoL). Symptom burden often fluctuates independently of relapse activity or disability progression and can significantly influence daily functioning, wellbeing, and long-term disease experience.

As a result, QoL is increasingly recognised as a key outcome measure alongside traditional clinical markers, such as relapse rate and disability progression. Growing evidence suggests that healthy lifestyle behaviours, including stress management, physical activity, nutrition, and vitamin D supplementation, may support improved QoL and help reduce symptom burden in people living with MS (PlwMS) (Butzkueven et al., 2025).

However, real-world adherence to recommended lifestyle behaviours, and the extent to which these relate to clinical outcomes remains underexplored. A better understanding of these relationships may help inform service provision, clinical guidance, and self-management support strategies for PlwMS.

Aims

To examine associations between adherence to healthy lifestyle behaviours, quality of life (QoL), and self-reported symptom management in PlwMS.

Methods

Self-reported data were collected via a cross-sectional survey assessing adherence to recommended lifestyle behaviours, conducted as part of a wider charity-led survey to inform service development and advocacy. Quality of life was assessed using the MSQoL-29 (Rosato et al., 2016), generating Physical Health Composite (PHC) and Mental Health Composite (MHC) scores. Adherence was based on self-reported yes/no responses to each recommended behaviour.

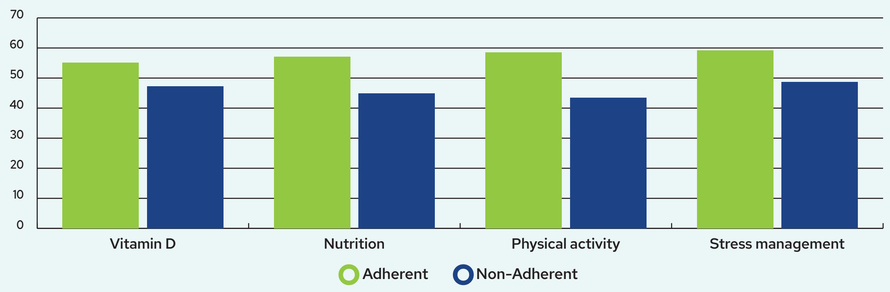
Participants were also invited to provide qualitative responses, describing their MS symptoms and to self-report whether they perceived lifestyle changes to have had a positive impact on symptom management. Qualitative symptom data were analysed thematically to identify common patterns and experiences. Quantitative data were analysed in JASP. Independent samples t-tests were conducted to compare PHC and MHC scores between adherent and non-adherent groups. Cumulative adherence was analysed by grouping participants according to the number of behaviours followed (1–2 behaviours vs. 5–6 behaviours).

Results

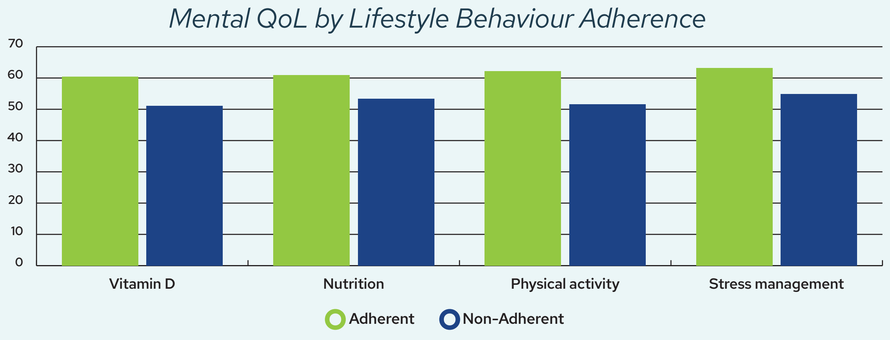
Participants (N=549) were predominantly female (81%), white (88%), aged 55–64 (37%) and based in the UK (44%) USA (19%) or Australia (18%); 60% had RRMS. Reported symptoms included fatigue, mobility difficulties, bladder problems, and numbness or tingling. Greater adherence to healthy lifestyle behaviours was associated with significantly higher physical and mental QoL (all $p<0.001$).

Participants adhering to 5–6 behaviours reported higher QoL than those adhering to 1–2 behaviours (physical: 64.7 vs 44.1; mental: 66.5 vs 52.0; $p<0.001$). Overall, 92% reported lifestyle changes improved symptom management, with 20% reporting it made management “extremely” easier.

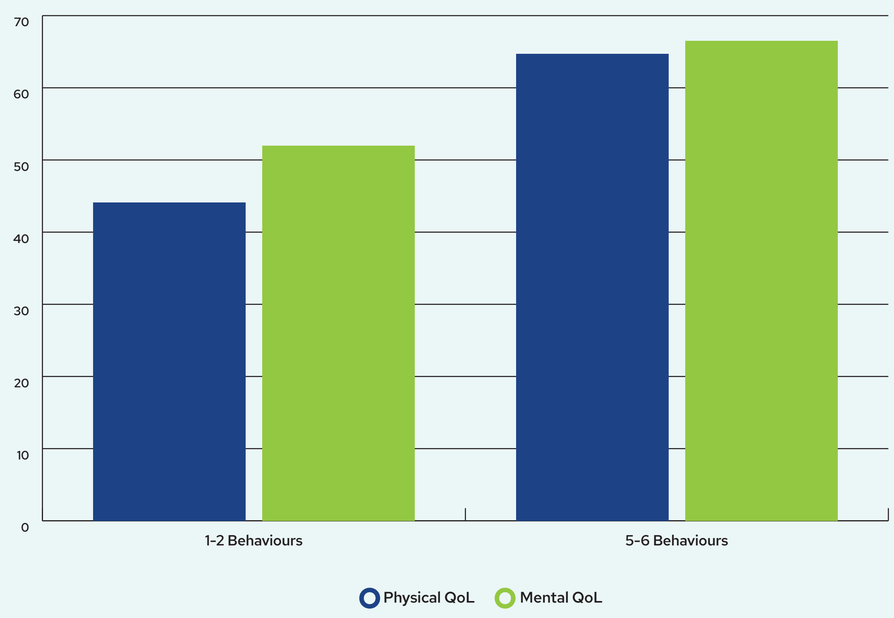
Physical QoL by Lifestyle Behaviour Adherence



Mental QoL by Lifestyle Behaviour Adherence



Quality of Life by Number of Lifestyle Behaviours Followed



Key finding

92% of respondents reported that lifestyle changes had helped them manage their symptoms

Conclusion

Adherence to healthy lifestyle behaviours was associated with higher physical and mental quality of life scores, alongside perceived improvements in symptom management among people living with MS. Although causal relationships cannot be established due to the cross-sectional design, the findings suggest that reducing symptom burden through lifestyle modification may positively influence individuals’ perceptions of their clinical course and overall wellbeing.

Clinical and service recommendations

- Embedding structured discussions around symptom burden and lifestyle management into routine neurology appointments
- Developing referral pathways to voluntary-sector services that support self-management and quality of life improvement
- Equipping healthcare professionals with practical resources to facilitate conversations around lifestyle approaches to reducing symptom burden and supporting long-term wellbeing
- Designing holistic interventions that target multiple lifestyle behaviours simultaneously to optimise symptom management and potentially influence perceived clinical course

Limitations

- Cross-sectional design prevents causal inference
- Self-reported diagnosis and adherence
- Potential selection bias due to recruitment through charity networks
- Predominantly white, female sample may limit generalisability

Despite these limitations, the large international sample and consistent findings across behaviours provide robust support for further investigation and implementation research.

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