RESEARCH ROUNDUP FOR SPRING: September 2022

Welcome to spring, and a really bumper few months ahead before the end of the year. ECTRIMS will take place (as a hybrid meeting) in late October in Amsterdam, and as usual, we expect major MS scientific announcements and the highlights of new MS research to be presented for the first time. Following shortly thereafter will be the first MSNA conference in person for a huge three years, in Melbourne from the 10-12th November. The next few months will no doubt keep adding to our ever-expanding toolkit in helping to manage MS for our patients and clients, and we look forward to learning more. The last quarter has seen so much Australian, and MS Australia funded research, come to fruition especially from the AMSL study group. MS Nurses are critical in promoting and extending the AMSLS and of course, in gathering and entering data for MSBase.

Australian Social and Applied Research

1. Disease reactivation after cessation of disease-modifying therapy in patients with relapsing remitting multiple sclerosis

Authors: Roos, Kalincik et al on behalf of MS Base & OFSEP

Published in the highly prestigious *Neurology* journal this MSBase (global MS registry) and OFSEP (French MS registry) study involved sites from Australia where undoubtedly MS Nurse support was a key factor in data collection. The retrospective study evaluated the rate of return of MS disease activity for 12 months after ceasing DMTs in over 14,000 patients. Annualised relapse rates (ARR) started to increase two months after Natalizumab cessation but commencing another therapy within two-four months of cessation reduced this impact. After ceasing fingolimod, rates of relapse increased overall, but stabilised with a new therapy started in one-two months. For the other therapies, disease reactivation was low, but further reduced by starting another therapy within one-ten months. Importantly, predictors of relapse were higher relapse rate in the year before cessation, female sex, younger age and higher EDSS. Prompt commencement of a new therapy reduced both the risk of relapse and disability accumulation. The main take home message from this study is that after stopping anti-trafficking therapies (fingolimod and natalizumab) the interval to start a new therapy should be as minimal as possible to reduce further relapses.

Read more: doi: 10.1212/WNL.0000000000201029

https://doi.org/10.1212/WNL.0000000000201029

2. Gains in MS knowledge following completion of the Understanding MS online course are maintained six months after course completion

Authors: Claflin, Bessing, van der Mei, Campbell & Taylor

Published in *Multiple Sclerosis and Related Disorders*, this study examined retention of information by participants of the Understanding MS massive online course (MOOC), which is often recommended by MS Nurses as part of their patient education and support toolkit. Six months after completion, participant responses were analysed to determine the effect of the MOOC on MS knowledge, health literacy, resilience, self-efficacy, quality of life and MS symptom severity, in both people with MS (N=139) and without MS (N=164). Findings revealed that for all participants, MS knowledge was significantly increased, with people with MS demonstrating increases in health literacy and self-efficacy. There was no effect, however, on resilience or quality of life. This study reinforces the importance of, and potential impact of, health education for the MS community.

Read more: doi: 10.1016/j.msard.2022.104085

https://doi.org/10.1016/j.msard.2022.104085

3. Reasons for non-completion of a massive online course about MS: A mixed methods study

Authors: Claflin, Klekociuk, Campbell & Taylor

This study also looked at data from the same MS MOOC as above, to determine reasons for non completion the course. Published in *Multiple Sclerosis and Related Disorders*, the researchers surveyed non-completers with an online questionnaire using both a quantitative and qualitative approach. A total of 397 participants responded, just under 5% of the non-completers. The primary reasons for not completing the course were time constraints and limitations, some of which was exacerbated by the COVID-19 pandemic. Interestingly, people with MS also cited MS symptoms as a reason for not finishing the course. In practice, MS Nurses are well aware that MS-related symptoms such as fatigue, depression, cognition and visual issues can hinder educational endeavours. Suggested changes to the course included extending the course time beyond six weeks and making it more self-paced (currently a new module opens each week). The key message here is that accessibility and MS symptoms should be considered when planning educational resources for this population.

Read more: doi: 10.1016/j.msard.2022.104092

https://doi.org/10.1016/j.msard.2022.104092

4. Vaccine hesitancy in people with multiple sclerosis

Authors: Lechner-Scott, Davis, Hawkes, Giovannoni, Levy & Yeh

This Editorial, published in *Multiple Sclerosis and Related Disorders* and led by Australian Jeannette Lechner-Scott, explored vaccine hesitancy rates in MS patients and the reasons for it. An Irish study estimated up to 20% of PwMS felt hesitant about vaccines with another recent article suggesting that the negative role of social media and even politically motivated disinformation may play a part in this. Also at play are some of the DMTs used in MS which may amplify severe infection in this population. The authors also highlight that although the current COVID variants are much milder than the initial wave of COVID-19 infections, the long term sequelae of COVID-19, such as fatigue, cognitive impairment and possibly cortical thinning, are still important. The international medical advice for people with MS or other neuro-immunological disorders recommends not only vaccinations for COVID but also for influenza, including booster vaccines. Although internationally there have been many cases of new onset neuro-immunological conditions like Guillain Barre Syndrome or Neuromyelitis Optica, worsening of pre-existing conditions and MS relapses in those who have been recently vaccinated, the question of causality is yet to be resolved. The authors recommend that a detailed vaccination history is taken from all MS patients prior to initiation of DMTs, and that catch-up vaccines should be administered prior to initiation of such treatment if needed. The underlying reasons why PwMS experience vaccine hesitancy needs to be the subject of urgent and important future large-scale investigations.

Read more: doi: 10.1016/j.msard.2022.104102

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5. Safety of low-intensity repetitive transcranial magneTic brAin stimUlation foR people living with mUltiple Sclerosis (TAURUS): study protocol for a randomised controlled trial

Authors: Makowiecki, Young, Taylor et al

At present, remyelination is insufficient to protect neurons from degeneration in PwMS. Previous work from this group reported that four weeks of daily low intensity repetitive transcranial magnetic stimulation (rTMS) increased the number of new myelinating oligodendrocytes in laboratory mice. This article aimed to translate this laboratory protocol to determine safety and tolerability for people with MS and outline how the study will be performed. A total of 30 participants with relapsing and secondary progressive MS will take part in the study and undergo an extensive battery of assessments prior to the rTMS intervention. Participants will be randomised to the treatment or a placebo treatment and carefully treated and monitored over a month, with all assessments (including MRI) being completed at the end of the intervention period and patient-reported outcomes followed up again at four months post intervention. It is anticipated that this study will inform further work in remyelination and determine if rTMS is safe and tolerable for people living with MS.

Read more: doi: 10.1186/s13063-022-06526-z

https://doi.org/10.1186/s13063-022-06526-z

6. The feasibility of an online educational lifestyle program for people with multiple sclerosis: A qualitative analysis of participant semi-structured interviews

Authors: Bevens, Neate et al.

This Australian-based study explored the feasibility of a randomised controlled trial of a multiple sclerosis online course (MSOC) which focused on lifestyle and MS. The MSOC was developed in two arms, an intervention arm which contained evidence-based lifestyle modification recommendations, and standard-care arm which delivered information from MS websites reflecting standard advice. Seven modules were delivered over six weeks. Course completers were invited to participate in interviews which were analysed using thematic analysis. Fourteen participants from multiple countries took part in the study interviews, with findings revealing four key themes: "hearing our stories" (hope for the future, feeling represented, exploring the journey of others with MS, learning from diversity, and wanting to connect with others); "taking the plunge" (not wanting to be first, feelings of nervousness or reluctance and feeling confronted); “accessibility and safety of being online" (ease of access, going at your own pace, making it work and not letting others down); and "unpacking the course" (ease of navigation, visuals, understandability, and length and timing). Participants found the course accessible and easy to understand, assisting our understanding of appropriate targeted digital education for PwMS.

Read more: doi:10.1177/20552076221123713

https://doi.org/10.1177/20552076221123713

7. Associations between diet quality and depression, anxiety, and fatigue in multiple sclerosis

Authors: Saul, Taylor, Blizzard…. van der Mei et al

It is a common theme in clinic to hear about PwMS modifying their dietary intake after their MS diagnosis, but to date there is little evidence that these adjustments affect MS outcomes. This study followed participants for ten years after their first clinical demyelinating event, assessing depression, anxiety, and fatigue at the 5-and 10-year reviews using the Hospital Anxiety and Depression Scale and Fatigue Severity Scale, respectively. Dietary intake in the preceding 12 months was assessed at baseline, and five- and ten-year reviews using a food frequency questionnaire. Diet quality was assessed using the Australian Recommended Food Score (ARFS) and the Diet Quality Tracker (DQT). Findings revealed that a higher diet quality in the previous 12 months using the ARFS score was associated with lower levels of depression, but not with anxiety or fatigue. Overall, there was a lack of consistency between the two diet measures used. More research needs to follow in this area to inform clinical advice.

Read more: doi:10.1016/j.msard.2022.103910

https://doi.org/10.1016/j.msard.2022.103910

8. Estimating the impact of work difficulties, work self-efficacy and work psychological safety on MS-related work productivity loss

Authors: Bessing, Claflin, Taylor…van der Mei

A comprehensive understanding of factors associated with MS related work productivity loss will help inform targeted interventions for PwMS, especially in the time post-diagnosis. This research group in Tasmania have previously shown the strong impact of symptom severity on MS-related work productivity loss. However, little is known about the effect of work difficulties, self-efficacy and ork psychological safety. This study explored the associations between these issues together with MS-related presenteeism, absenteeism and lost work productivity using n=744 participants in the AMSLS study cohort. Findings revealed that low self-esteem, interpersonal difficulties and self-efficacy in the workplace were associated with total work productivity loss. Work psychosocial well-being such as self-confidence, self-efficacy and interpersonal difficulties are crucial factors governing work productivity in PwMS. As a central link in multidisciplinary care, MS Nurses can be an important source of support for patients in symptom self-care, skills around effective communication about MS in the workplace, the psychological impact of work and the modification of work demands, which may positively influence employment outcomes.

Read more: doi: 10.1177/13524585221097573

https://doi.org/10.1177/13524585221097573

9. Superior effects of natalizumab versus other DMTs on patient-reported outcomes in people with multiple sclerosis

Authors: Chen, Diouf, Taylor, Kalincik & van der Mei

Little is known about the comparative effectiveness of MS DMTs on patient-reported outcomes in MS. This study compared the effects of natalizumab to other DMTs in relation to MS symptom severity, quality of life, disability, disease progression and employment outcomes using real-world data from the long standing AMSLS study. Almost 1400 participants were included, and information collected regarding treatment, health and employment outcomes. Findings revealed that natalizumab was associated with general trends of improvement in the severity of many symptoms and work productivity loss. There were no differences for spasticity, fatigue, pain, feelings of depression, disability, quality of life, presenteeism and work status. Overall, natalizumab was associated with superior outcomes over time for many patient-reported health and employment outcomes when compared with other DMTs in this study. These findings may influence treatment selection in clinical practice and inform future treatment cost-effectiveness analyses.

Read more: doi: 10.1136/jnnp-2022-329223

https://doi.org/10.1136/jnnp-2022-329223

10. Mechanisms of central brain atrophy in multiple sclerosis

Authors: S. Klistorner, Barnett & A. Klistorner

Although primarily a scientific study, the findings of this work have significant meaning. Change in ventricular volume has been suggested as a surrogate measure of central brain atrophy (CBA) applicable to the everyday management of PwMS. This study investigated the contribution of inflammatory activity to CBA. A total of 50 patients with RRMS were followed for four years using custom built software to assess lesional activity, such as chronic lesions, new confluent lesions and new free-standing lesions. Results revealed that ventricles expanded by an average of about 13% over the four year period, with a significant increase of total lesion volume, 69% of which was due to expansion of chronic lesions. This indicates that chronic MS lesions play a central role in CBA, which adds to our understanding of brain atrophy and inflammation in MS.

Read more: doi:10.1177/13524585221111684

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International Social & Applied Research

Communication between persons with multiple sclerosis and their health care providers: A scoping review

Authors: Thompson, Pulido, Babu, Zenzola & Chiu

This American study is a scoping review about communication between PwMS and their healthcare professionals (HCPs). A total of 175 articles were included in the review across the usual databases. Of interest to MS practitioners, the review found that HCPs should consider the complexity of communication when interacting with PwMS, including the larger context in which it occurs, communication processes and their purposes, and short-term and long-term consequences of their interactions. Ecological and pathway models can be frameworks for developing educational materials, to capture key communication issues and outcomes. The full article provides additional information to support HCPs in understanding where communication issues may arise, especially around the time of diagnosis and major decision making.

Read more: doi: 10.1016/j.pec.2022.07.013

https://doi.org/10.1016/j.pec.2022.07.013

11. Optimising recruitment in clinical trials for progressive multiple sclerosis: observational analysis from the MS-SMART and MS-STAT2 randomised controlled trials

Authors: Williams, Alexander, Blackstone…Chataway et al

Slower clinical trial recruitment is a major factor contributing to the delay or failure of randomised controlled trials to report on time. This article explores this group's experience in recruitment for two large randomised controlled trials for people with SPMS, aiming to determine factors to facilitate trial recruitment in progressive disease. Two sequential studies in the UK, MS-SMART and MS-STAT2 were reviewed from the largest recruiting site, University College London. The researchers looked at sources of referral, progress through stages of recruitment, reasons for participant ineligibility and the impact of publicity events upon recruitment. Findings revealed that in MS-SMART, 18% of patients contacted were enrolled, compared to 27% for MS-STAT2. Interestingly, online interest portals provided the greatest number of referrals (76% in MS-SMART and 51% in MS-STAT2), with publicity in national media outlets producing an increase in the number of potential participants. For those people ineligible to take part in the studies, difficulties related to travel to trial visits, or excluded medication, were the most common issues. The authors identified several approaches that may improve recruitment efficiency, including the importance of mandatory online self-screening questionnaires, a coordinated publicity campaign, and simple interventions such as eligibility checklists and appointment reminders.

Read more: doi: 10.1186/s13063-022-06588-z

https://doi.org/10.1186/s13063-022-06588-z

12. MSProDiscuss™ Clinical Decision Support Tool for Identifying Multiple Sclerosis Progression

Authors: Ziemssen, Vandercappellen, Mondragon & Giovannoni

This article describes the rationale for the development of the MSProDiscuss™ clinical decision support (CDS) tool, its development, and insights into how it can help neurologists improve care for patients with MS. There is growing consensus that MS exists on a continuum, with overlap between relapsing-remitting and secondary progressive phenotypes and that neuroaxonal loss occurs from the outset. Early intervention can benefit patients, and there is a need for a tool that assists in rapidly identifying subtle signs of MS progression. MSProDiscuss, developed with physicians and patients, facilitates a structured approach to patient consultations. It analyses the contribution of various symptoms, and the impact of symptoms on daily living, enabling a more personalised approach to treatment and disease management. MSProDiscuss offers new insights into disease course and facilitates informed decision-making and a holistic approach to MS patient care. Further information for MS clinics and community nurses can be found in the full article.

Read more: doi: 10.3390/jcm11154401

https://doi.org/10.3390/jcm11154401

13. "I would stress less if I knew that the nurse is taking care of it": Multiple Sclerosis inpatients and health care professionals' views of their nursing-experience and nursing consultation in rehabilitation-a qualitative study

Authors: Witzig-Brandli, Lange, Gschwend & Kohler

As well as in MS clinics, nurses also play a crucial role in the multidisciplinary team in the rehabilitation of MS patients. However, little is known about patients' and healthcare professionals' (HCP) experiences with nurses in the rehab setting. The aim of this qualitative study was to describe the rehabilitation nursing care from the perspective of MS patients and HCPs and their view of nursing consultations. This qualitative study performed semi-structured individual interviews with 15 MS patients and two focus group interviews with 8 HCPs in an inpatient rehabilitation clinic in Switzerland. Findings revealed that MS patients have the following points according to a nursing consultation: nurses as advocates, involvement of relatives, peer groups and the need for a contact person. For HCPs, they saw the nurse role as "nurses in their scope of practice", "nurses as a part of the multidisciplinary team" and "the specifications in the treatment of MS patients". MS patients and HCPs demonstrated similarly the importance to have a nurse as a contact person in the multidisciplinary team and the need to integrate a nurse-led peer group in a nursing consultation. While HCPs prefer that relatives always be included in nursing consultations, patients provided reasons when inclusion was not desirable.

Although focusing on a rehabilitation setting, this study creates a deeper understanding of MS patients and their needs, particularly the need for MS patients to share their concerns and receive scientifically proven knowledge.

Read more: doi: 10.1186/s12912-022-01013-x

https://doi.org/10.1186/s12912-022-01013-x