



## Original article

# Characteristics and expectations of people with multiple sclerosis using complementary therapies: A cross-sectional survey from the swiss multiple sclerosis registry

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## ABSTRACT

**Background:** Understanding the characteristics and expectations of people with multiple sclerosis (pwMS) who utilize complementary therapies can help integrate these therapies into conventional care.

**Objectives:** To describe the characteristics of pwMS who use complementary therapies, their general reasons and targeted symptoms, and their expectations regarding the effects of these therapies.

**Methods:** A cross-sectional survey of pwMS from the Swiss Multiple Sclerosis Registry was conducted from October 2022 to August 2023.

**Results:** 888 pwMS participated (39.3 % participation rate). 48.2 % had used complementary therapies in the last six months. The most typical reasons were to improve quality of life (43.9 %) and alleviate MS symptoms (37.8 %). Participants expected manual therapies and natural substances to be most effective for physiological complaints, with median effectiveness scores of 7 (interquartile range [IQR]: 5–9 and 5–8). Mind-body therapies and natural substances were also expected to be the most effective for psychological complaints (median of 7 and 6, IQR: 3.5–8 and 3–8). Complementary therapies were considered safe (median safety scores ranging from 7 to 9).

**Conclusions:** PwMS frequently use complementary therapies, and their reasons and expectations can differ. Understanding the characteristics of pwMS who use complementary therapies, their reasons for use, and their expectations can support tailoring MS treatment.

## 1. Introduction

Complementary medicine (or complementary therapies) and

alternative medicine usually refer to a broad set of health care practices that are not part of that country's own traditional or conventional medicine and are not fully integrated into the dominant health care

**Abbreviations:** DMT, disease-modifying therapies; MFIS-21, Modified Fatigue Impact Scale; PMS, progressive MS; pwMS, people with multiple sclerosis; RRMS, relapsing-remitting MS; SMSR, Swiss Multiple Sclerosis Registry; SRDSS, Self-reported disability status scale.

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system (World Health Organisation (WHO) 2019). They are often used together with conventional medicine. Examples are acupuncture, meditation or yoga. Complementary therapies may help alleviate various symptoms of MS (Silbermann et al., 2020; National Center for Complementary and Integrative Health (NCCIH) 2021) and could offer distinct advantages over pharmacological treatments. First, these therapies typically provide a more holistic approach to health, which can lead to better outcomes, such as stress reduction. Second, while complementary therapies are not without risks, they may provide a safer alternative or adjunct to pharmaceutical drugs for managing certain symptoms, particularly when conventional treatments present a higher risk of adverse effects (Mastorci, 2023; Mentink et al., 2023).

Knowing the characteristics of people with MS (pwMS) who use complementary therapies and their expectations towards these interventions is essential. First, pwMS frequently use complementary therapies (30.5 % to 81 % have used at least one complementary therapy) (Silbermann et al., 2020; Gotta et al., 2018; Huybregts et al., 2018; Kim et al., 2018). Second, the safety and effectiveness of complementary therapies in pwMS need to be evaluated (National Center for Complementary and Integrative Health (NCCIH) 2021; Yadav et al., 2010). Thus, identifying which complementary therapies pwMS are interested in can guide future research. Third, knowing which complementary therapies pwMS find most beneficial can help integrate these therapies into conventional MS care, offering a more holistic treatment approach. This information can also guide health professionals on the complementary therapies they should be trained in, as health professionals often lack knowledge of complementary therapies and clinical guidelines for pwMS are rare (Chang and HL, 2015; Ng et al., 2016). Fourth, international MS organizations highlight that pwMS priorities concerning complementary therapies should guide policy decisions (National Center for Complementary and Integrative Health (NCCIH) 2021; Multiple Sclerosis International Federation 2021).

The Swiss Multiple Sclerosis Registry (SMSR), funded by the Swiss MS Society, is an ongoing, prospective, longitudinal national registry. It enrolls adults with a confirmed diagnosis of MS who reside in Switzerland or receive care in this country (Puhan et al., 2018). Using the SMSR data, our study aims to know the characteristics of pwMS who use complementary therapies. First, we will describe the characteristics of pwMS that use complementary therapies. Second, we will identify the general reasons and symptoms for complementary therapies use. Third, we will characterize the expectations of pwMS on the potential effects of complementary therapies.

## 2. Methods

### 2.1. Ethics

Study approval was obtained from the Cantonal Ethics Committee Zurich (PB-2016-00,894). All participants are enrolled in SMSR and provided informed consent (Puhan et al., 2018).

### 2.2. Study design

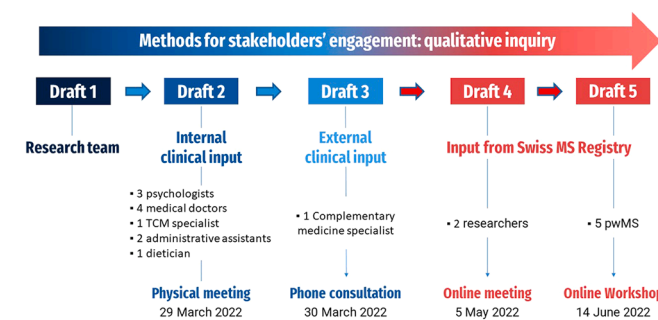
A cross-sectional national survey of adults of the SMSR (adults living in Switzerland or receiving care in this country with confirmed MS). The Institute of Complementary and Integrative Medicine (University Hospital Zurich) developed the questionnaire, which was incorporated into the regular SMSR follow-up survey. The questionnaire focused on complementary therapies compiled from relevant sources and stakeholders' input (Table 1 and Fig. 1) (Lorenc et al., 2018; Wieland et al., 2011; Mashola et al., 2021).

The questionnaire explored the general reasons for using complementary therapies, as well as their symptomatic applications, encompassing past, present, and potential future usage. Participants also articulated their expectations regarding the potential effectiveness of these therapies in addressing physiological and psychological issues, as

**Table 1**  
Complementary therapies addressed in the survey.

Intervention group	Definition	Examples
1. Manual therapies	Interventions that are based on the manipulation of parts of the body	<ul style="list-style-type: none"> <li>■ Acupuncture</li> <li>■ Massage</li> <li>■ Osteopathy</li> <li>■ Reflexology</li> </ul>
2. Mind-body therapies	Techniques to strengthen the mind or to bridge between mind and body to reduce disease symptoms and improve quality of life	<ul style="list-style-type: none"> <li>■ Self-care (such as meditation, mindfulness, and relaxation)</li> <li>■ Movement therapies (such as yoga, qigong, tai chi)</li> <li>■ Sensory-art therapies (such as music, painting)</li> </ul>
3. Natural products-based therapies	The use of components found in nature. Natural substances can be taken into or applied to the body in any form, such as orally, topical, inhaled or injected	<ul style="list-style-type: none"> <li>■ Cannabidiol</li> <li>■ Supplements, e.g., vitamins, minerals, and probiotics</li> </ul>
4. Specific diets	Usually imply diet changes without the intake of supplements/vitamins	<ul style="list-style-type: none"> <li>■ Aromatherapy</li> <li>■ Ketogenic diet (avoidance of carbohydrates)</li> <li>■ Gluten-free or vegan diets</li> </ul>

Interventions based on exercise and movement of body parts to improve strength, endurance, and coordination were not considered complementary therapies in our study. Examples are sports, physiotherapeutic exercises or Pilates.



**Fig. 1.** Survey development.

well as their safety concerns.

Participants were invited in three major waves, each spaced at least five months apart from their last survey completion. While the MS Registry lacked its own social media channels, the survey was promoted via the Swiss MS Society's Instagram and Facebook accounts. MS Registry participants who typically took part online in previous surveys were invited to complete the survey via a personal email. After logging in to the platform, they accessed the survey through a link or directly in the platform under the "My Surveys" tab. Upon registering on the MS Registry platform, online participants were directed to an electronic form to complete and sign the informed consent. The completed document was then available as a PDF download. Those who usually participated via paper received an invitation by post. Paper questionnaires were checked for completeness at the data center and then entered into the MS Registry platform by a research assistant. 2261 SMSR participants could access the survey anonymously digitally by invitation email via the MS Registry platform or in paper format by post. The survey was available in German, French, and Italian from October 2022 to August 2023.

Demographic variables included the participation channel (online/paper-based), sex (female/male), age, region of residence (German-, French-, and Italian-speaking regions in Switzerland), educational level (university/applied university, higher professional education, or

mandatory school/high school/apprenticeship), and current employment status (employed/unemployed). The MS form (RRMS: relapsing-remitting multiple sclerosis, PMS: progressive multiple sclerosis, including primary PMS and secondary PMS) and disease duration (years since diagnosis) were noted, along with MS relapses in the last three months. The annual relapse data were self-reported by participants. Additionally, clinical data from medical records were gathered for a subsample of 10 % of participants to ensure data validity. A standardised list of MS symptoms and the use of disease-modifying therapies (DMT) in the last six months were also collected. Disability was measured with the self-reported disability status scale (SRDSS), (Kaufmann et al., 2020) and fatigue with the Modified Fatigue Impact Scale (MFIS-21) (Fisk et al., 1994) questionnaire.

Participants identified their general reasons for using complementary therapies and declared their use of complementary therapies for specific MS symptoms. Complementary therapies were grouped into four categories (see Table 1). The exercise was considered conventional medicine and defined as the reference group. Recent users had used at least one complementary therapy in the last six months. Participants rated their expectations regarding the potential effects of each of these groups of therapies using a Likert scale (0 to 10) from "Don't agree at all" to "Completely agree". In terms of effectiveness, participants rated their expectations for improving physiological and psychological complaints. Additionally, participants rated their expectations concerning the safety of each complementary therapy group.

### 2.3. Analysis

Standardized data cleaning and checks were conducted before releasing the data as a validated file for analysis, with a senior data manager overseeing the process. We used R v4.2.2 (R Core Team 2024) and MAXQDA (Release 20.4.2) softwares (Kuckartz, 2019). Descriptive statistics (percentages, means and standard deviations (SD), medians and interquartile ranges (IQR) and normalized IQR (nIQR)) summarized dichotomous and quantitative data in narrative and tabular formats. The Kruskal-Wallis test was used to compare medians of three or more groups (Hollander et al., 2013). Subjects responding "I don't know" or not responding to a particular item were excluded from the analysis. We conducted a multivariable logistic regression analysis to identify characteristics associated with recent use of complementary therapies as compared to non-recent use, adjusting for several covariates: symptom score (calculated as the sum of all symptoms that each participant suffers from), age, duration of MS, gender, education level, geographical region in Switzerland, type of MS (relapsing remitting MS (RRMS) or progressive MS (PMS)), use of immunomodulating drugs, and survey channel. Statistically significant differences were defined as  $p < 0.05$ . Results are presented for the whole sample and stratified for relapsing-remitting MS (RRMS) and progressive MS (PMS). We performed qualitative thematic analysis of the open text data collected in the survey (Kuckartz, 2019). Thereby, we applied a deductive and inductive coding strategy, allowing multiple coding and sense units equaling coding units. We deductively coded the open texts based on the online survey's structure and questions. In addition, we inductively created codes based on the participants' comments. These codes could transverse the deductive codes. The coding was intersubjectively validated among three researchers (NS, HM, and CC).

## 3. Results

### 3.1. Demographic and MS characteristics of the included sample

888 pwMS out of 2261 invitations completed the survey by June 6, 2023 (participation rate: 39.3 %). 698 participants (78.6 %) completed the online instead of the paper form (21.4 %). 547 (61.6 %) participants reported having RRMS and 266 (30.0 %) PMS (either primary or secondary). 34 participants (3.8 %) were transitioning between two stages

or other forms and twelve participants presented a clinically isolated syndrome or no confirmed MS diagnosis. Twenty-nine participants (3.3 %) did not provide information on the MS form.

Participants were predominantly females ( $n = 658$ ; 74.1 %) with a mean age of 52.8 years (SD 12.2). Most lived in the German-speaking region of Switzerland ( $n = 709$ ; 79.8 %) and were employed ( $n = 520$ ; 58.6 %). 346 respondents (39 %) had a high professional education or university degree. The mean MS duration was 14.4 years (SD 9.3), and 64 participants (8.7 %) had a recent MS relapse. On average, the participants had 7.4 MS symptoms (SD 4.4) in the last six months, the most frequent were fatigue (49.7 %), paraesthesia (40.7 %), balance problems (36.3 %), weakness (35.6 %), gait problems (32.7 %), spasticity (31.4 %) and concentration problems (29.7 %). 63 % of participants ( $n = 172$ ) had a disability of intermediate intensity (SRDSS score: 4 to 6.5 points), and 597 (67.2 %) were on DMT treatment in the last six months. Demographic and MS-related characteristics of RRMS and PMS participants were often similar (see Table 2).

### 3.2. Characteristics of recent users of complementary therapies

Table 2 details the characteristics of recent and non-recent complementary therapy users. Of the 888 participants, 428 (48.2 %) were recent users. The proportion of recent complementary therapy users was similar in RRMS and PMS participants (47.9 % vs 50.8 %, respectively). Recent complementary therapy users were predominantly females ( $n = 344$ ; 80.4 %) with a mean age of 52.7 years (SD 11.8). Most recent complementary therapy users lived in the German-speaking region of Switzerland ( $n = 365$ ; 85.3 %) and were employed ( $n = 255$ ; 59.6 %). 26.4 % had a university degree ( $n = 113$ ). Recent users had MS for 14.4 years on average (SD 9.3), and 7.7 % ( $n = 33$ ) presented a MS relapse in the previous three months. Over the past six months, recent users had a median of seven MS symptoms (IQR 4 to 10), the most frequent being fatigue ( $n = 251$ ; 58.6 %), paraesthesia (202; 47.2 %) and balance problems ( $n = 186$ ; 43.5 %). Most recent users from whom this information was obtained ( $n = 110$ ; 25.7 %) had disability of intermediate intensity (SRDSS score: 4–6.5), and 285 (66.6 %) had used DMT in the last six months.

The regression analysis showed no statistically significant differences between recent and non-recent users in terms of their age, gender, education level, type of MS, duration of MS, symptom score, disability, and recent use of DMTs. The analysis found a statistically significant association between recent complementary therapies use and age (Odds Ratio (OR) 0.97, 95 % confidence interval [CI] = 0.95 to 0.99), living in the French-speaking geographic region in Switzerland (OR 0.43, 95 % CI = 0.25 to 0.75), and participating in the survey using the online form (OR 0.42, 95 % CI = 0.26 to 0.68). However, these differences seemed not clinically relevant (Supplemental Table 1).

### 3.3. General reasons for complementary therapies use among pwMS

PwMS's primary motivation for current complementary therapies use was to improve their quality of life (43.9 %), followed by alleviating MS symptoms (37.8 %), slowing MS progression (32.9 %), and managing symptoms unrelated to MS (28.5 %). The least frequent reason was mitigating side effects of MS treatment (15.7 %). This hierarchy of reasons remained consistent for previous and future use, with improving quality of life being the most common and reducing treatment side effects being the least common. Over time, the proportion of participants using complementary therapies for each reason increased from past to present (ranging from a 5.6 % increase for reducing side effects to a 22.1 % increase for improving quality of life). However, these proportions decreased from present to future (ranging from a 10.2 % decrease for reducing side effects to a 29.6 % decrease for improving quality of life).

RRMS and PMS participants showed no relevant differences in their general reasons for past, current, or future use of complementary therapies. The difference in the proportion of RRMS and PMS participants

**Table 2**  
Demographic and MS-related characteristics of the included sample, N = 888.

Variable	Total sample <sup>a</sup>	RRMS <sup>a</sup>	PMS <sup>a</sup>	Recent complementary therapies users <sup>b</sup>	Non-recent complementary therapies users <sup>b</sup>
Participants by June 6, 2023, n (%)					
Total	888 (39.3) <sup>a</sup>	547 (61.6)	266 (30.0)	428 (48.2) <sup>c</sup>	438 (49.3) <sup>c</sup>
RRMS				262 (47.9)	281 (51.4)
PMS				135 (50.8)	128 (48.1)
Survey participation channel, n (%)					
Online form	698 (78.6)	441 (80.6)	200 (75.2)	307 (71.7)	373 (85.2)
Paper form	190 (21.4)	106 (19.4)	66 (24.8)	121 (28.3)	65 (14.8)
Sex, n (%)					
Female	658 (74.1)	440 (80.4)	162 (60.9)	344 (80.4)	299 (68.3)
Male	222 (25.0)	102 (18.6)	103 (38.7)	80 (18.7)	137 (31.3)
Other or NR	8 (0.9)	5 (0.9)	1 (0.4)	4 (0.9)	2 (0.5)
Age in years					
Mean (SD) n	52.8 (12.2) 876	48.8 (11.1) 541	60.5 (10.6) 263	52.7 (11.8) 420	53.1 (12.5) 436
Median (IQR) nIQR	54 (44–61) 17	49 (41–57) 16	61 (54–68) 14	53 (44,61) 17	54 (43.8,61) 17.2
Geographic region in Switzerland, n (%)					
German-speaking	709 (79.8)	444 (81.2)	207 (77.8)	365 (85.3)	330 (75.3)
French-speaking	133 (15.0)	80 (14.6)	39 (14.7)	44 (10.3)	81 (18.5)
Italian-speaking	30 (3.4)	18 (3.3)	10 (3.8)	10 (2.3)	20 (4.6)
NR/NA	16 (1.8) <sup>d</sup>	5 (0.9)	10 (3.8)	9 (2.1)	7 (1.6) <sup>d</sup>
Level of education, n (%)					
I <sup>e</sup>	234 (26.4)	146 (26.7)	69 (25.9)	113 (26.4)	117 (26.7)
II <sup>e</sup>	111 (12.5)	73 (13.3)	29 (10.9)	58 (13.6)	49 (11.2)
III <sup>e</sup>	454 (51.1)	268 (49)	145 (54.5)	212 (49.5)	232 (53)
NR	89 (10.0)	60 (11.0)	23 (8.6)	45 (10.5)	40 (9.1)
Employment status, n (%)					
Employed	520 (58.6)	383 (70.0)	100 (37.6)	255 (59.6)	257 (58.7)
Unemployed	285 (32.1)	109 (19.9)	144 (54.1)	128 (29.9)	146 (33.3)
NR	83 (9.3)	55 (10.1)	22 (8.3)	45 (10.5)	35 (8.0)
Disease duration in years					
Mean (SD) n	14.4 (9.3) 856	12 (7.9) 529	18.6 (10.1) 258	14.4 (9.3) 409	14.4 (9.3) 428
Median (IQR) nIQR	13 (7–20) 13	10 (6–17) 11	18 (10–25) 15	13 (7–20) 13	13 (7–20) 13
Recent relapse (last three months), n (%)					
Recent relapse	64 (7.2)	52 (9.5)	7 (2.6)	33 (7.7)	31 (7.1)
NR	146 (16.4)	7 (1.3)	117 (44.0)	67 (15.7)	64 (14.6)
Number of MS symptoms in the last six months					
Mean (SD) n	7.4 (4.4), 583	6.6 (4.3), 334	8.3 (4.4) 204	7.5 (4.4) 329	7.2 (4.4) 247
Median (IQR) nIQR	7 (4,10), 6	6 (3,9), 6	8 (5,11) 6	7 (4–10) 6	7 (4–10) 6
MS symptoms in the last six months, n (%) <sup>f</sup>					
Fatigue	441 (49.7)	251 (45.9)	152 (57.1)	251 (58.6)	183 (41.8)
Paraesthesia	361 (40.7)	213 (38.9)	115 (43.2)	202 (47.2)	158 (36.1)
Balance problems	322 (36.3)	160 (29.3)	132 (49.6)	186 (43.5)	132 438 (30.1)
Weakness	316 (35.6)	142 (26.0)	141 (53.0)	173 (40.4)	141 (32.2)
Gait problems	290 (32.7)	108 (19.7)	154 (57.9)	168 (39.3)	117 (26.7)
Spasticity	279 (31.4)	118 (21.6)	136 (51.1)	159 (37.1)	118 (26.9)
Concentration	264 (29.7)	165 (30.2)	81 (30.5)	160 (37.4)	102 (23.3)
Pain	258 (29.1)	140 (25.6)	94 (35.3)	147 (34.3)	109 (24.9)
Bladder problems	255 (28.7)	110 (20.1)	120 (45.1)	146 (34.1)	104 (23.7)
Dizziness	199 (22.4)	118 (21.6)	61 (22.9)	116 (27.1)	82 (18.7)
SRDSS, n (%)					
≤ 3.5	29 (3.3)	17 (3.1)	10 (3.8)	17 (4.0)	12 (2.7)
4 – 6.5	212 (23.9)	58 (10.6)	129 (48.5)	110 (25.7)	98 (22.4)
≥ 7	71 (8.0)	9 (1.7)	57 (21.4)	33 (7.7)	38 (8.7)
NR	576 (64.8)	463 (84.6)	70 (26.3)	268 (62.6)	290 (66.2)
Recent DMT use (on treatment in the last six months), n (%)					
Recent DMT use	597 (67.2)	415 (75.9)	143 (53.8)	285 (66.6)	308 (70.3)
NR	37 (4.2)	13 (2.4)	7 (2.6)	10 (2.3)	12 (2.7)

CIS: clinically isolated syndrome, DMT: disease-modifying therapy, IQR: interquartile range, nIQR: normalized IQR, NA: not applicable, NR: not reported, PMS: progressive multiple sclerosis, PPMS: primary progressive multiple sclerosis, RRMS: relapsing-remitting multiple sclerosis, SD: standard deviation, SPMS: secondary progressive multiple sclerosis. SRDSS: self-reported disability status scale.

Results are shown as number (percentage), mean (standard deviation), or median (interquartile range).

<sup>a</sup> Total number of individuals invited: 2261. Total survey participants by clinical subgroup: RRMS (n = 547), PMS (PPMS or SPMS) (n = 266), transitioning between two stages or other forms (n = 34), CIS or no confirmed MS diagnosis (n = 12). Twenty-nine participants did not provide information on the MS form.

<sup>b</sup> Recent user: a participant who used at least one complementary therapy in the last six months. Non-recent user: a participant who did not use a complementary therapy in the last six months.

<sup>c</sup> Twenty-two participants did not answer the question regarding recent complementary therapy use: four presented RRMS, three PMS and fifteen presented other clinical subgroup or this information was missing.

<sup>d</sup> One patient reported to live in Liechtenstein.

<sup>e</sup> I: University/Applied University. II: Higher professional education. III: Mandatory school/high school/Apprenticeship.

<sup>f</sup> Participants were allowed multiple responses.

considering each general reason was consistently <10 %, except for the proportion of participants who had previously used complementary therapies to curb the MS progression (RRMS: 14.4 % vs PMS: 27.4 %). The hierarchy of reasons remained consistent in RRMS and PMS for past, present, and future use. The most common reason was always the improvement in quality of life, and the least common was the reduction of side effects of MS treatment. Over time, the proportion of RRMS and PMS participants using complementary therapies for each reason increased from past to present.

Table 3.

3.4. Current use of complementary therapies for symptom relief

Fig. 2 illustrates the proportion of participants who experienced each MS symptom in the past six months and those currently utilizing complementary therapies to mitigate each symptom. The current use of complementary therapies generally targets MS symptoms experienced in the previous six months. The five most prevalent symptoms among pwMS in the preceding six months were fatigue (441/888, 49.7 %), paraesthesia (361/888, 40.7 %), balance problems (322/888, 36.3 %), muscular weakness (316/888, 35.6 %), and gait problems (290/888, 32.7 %). This ranking of symptoms mostly aligns with the five most common symptoms for current complementary therapies use, namely muscular weakness (199/888, 22.4 %), gait problems (198/888, 22.3 %), spasticity (186/888, 20.9 %), balance problems (183/888, 20.6 %), and fatigue (158/888, 17.8 %).

3.5. Expectations of pwMS about the effects of complementary therapies

Fig. 3 details the participants' expectations on the effectiveness and safety of complementary therapies (see also Supplemental Table 2). The expectations varied depending on the type of expectation (effectiveness or safety), the therapy group, and the outcome type, that is, physiological or psychological complaints.

Expectations regarding the effectiveness demonstrated statistically significant variation among the four subgroups (manual therapies, mind-body therapies, natural substances, and specific diets) for both physiological ( $P < 0.001$ ) and psychological complaints ( $P < 0.001$ ). The median expectation values span from five to eight for physiological complaints and four to eight for psychological complaints. Manual therapies and natural substances presented the highest expectations for physiological complaints, with a median of seven (IQR: 5 to 9 and 5 to 8,

respectively). For psychological complaints, mind-body therapies (median: 7; IQR: 3.5 to 8) and natural substances (median: 6; IQR: 3 to 8) received the most optimistic expectations. Conversely, diet had the lowest expectations for physiological (median: 5; IQR: 3 to 8) and psychological (median: 4; IQR: 1 to 6) complaints.

The safety expectations were high, with median values ranging from seven to nine. However, these expectations exhibited statistically significant variation ( $P < 0.001$ ) across the four therapy groups. Manual and mind-body therapies were perceived as the safest, with a median rating of nine (IQR: 7 to 10 and 6 to 10, respectively). Natural products-based therapies followed with a median rating of eight (IQR: 5 to 10). Diet was considered the least safe, with a median rating of seven (IQR: 5 to 9).

Table 4 lists the topics pointed out by the participants via open-text answers (see more representative quotes in Supplemental Table 3).

4. Discussion

We aimed to know the characteristics of pwMS who use complementary therapies, their general reasons and symptoms for use, and their expectations on complementary therapies. We surveyed 888 pwMS in Switzerland. Half (48 %) of participants had used at least one complementary therapy in the last six months. Recent and non-recent complementary therapy users did not differ significantly in demographic and MS characteristics. Reasons for current complementary therapies use were improving quality of life (44 %), alleviating MS symptoms (38 %), slowing MS progression (33 %), managing symptoms unrelated to MS (28 %), and mitigating side effects of MS treatment (16 %). Complementary therapies targeted common MS symptoms. The pwMS's expectations on the effectiveness and safety of complementary therapies varied depending on the type of therapy and outcome. Manual and mind-body therapies were perceived as the most effective and safe, while diet was the least effective.

Our study presents several strengths. First, the survey is grounded in the SMSR (Puhan et al., 2018), an established, nationwide MS registry in Switzerland that ensures rigour and a representative participant base. Second, despite the survey's length and complexity, its big sample and high response rate (39.3 %) reflect a strong engagement from the MS community in Switzerland, which underscores the reliability of our findings. The 888 participants' sample size is comparable to similar surveys, encompassing 524 to 996 participants (Huybregts et al., 2018; Kim et al., 2018). Third, our survey introduced innovative questions on

Table 3  
General reasons for the use of complementary therapies by people with MS.

	Past use			Change <sup>a</sup>	Current use			Expected change <sup>b</sup>	Future use		
	Total <sup>c</sup>	RRMS	PMS		Total <sup>c</sup>	RRMS	PMS		Total <sup>c</sup>	RRMS	PMS
Total, n	888	547	266		888	547	266		888	547	266
To curb the progression of my MS disease, n (%)	167 (18.8)	79 (14.4)	73 (27.4)	14.1 %	292 (32.9)	174 (31.8)	98 (36.8)	-22.8 %	90 (10.1)	53 (9.7)	27 (10.2)
<b>Difference (RRMS - PMS)</b>		-13 %				-5 %				-0.5 %	
To relieve my MS symptoms, n (%)	191 (21.5)	104 (19)	70 (26.3)	16.3 %	336 (37.8)	198 (36.2)	111 (41.7)	-25.1 %	113 (12.7)	67 (12.2)	33 (12.4)
<b>Difference (RRMS - PMS)</b>		-7.3 %				-5.5 %				-0.2 %	
To reduce the side effects of my MS treatment, n (%)	90 (10.1)	46 (8.4)	36 (13.5)	5.6 %	139 (15.7)	79 (14.4)	51 (19.2)	-10.2 %	49 (5.5)	34 (6.2)	13 (4.9)
<b>Difference (RRMS - PMS)</b>		-5.1 %				-4.8 %				1.3 %	
To improve my quality of life, n (%)	194 (21.8)	107 (19.6)	65 (24.4)	22.1	390 (43.9)	238 (43.5)	125 (47)	-29.6	127 (14.3)	77 (14.1)	36 (13.5)
<b>Difference (RRMS - PMS)</b>		-4.8 %				-3.5 %				0.6 %	
To relieve other symptoms not caused by my MS, n (%)	178 (20)	113 (20.7)	52 (19.5)	8.5 %	253 (28.5)	171 (31.3)	67 (25.2)	-18.4 %	90 (10.1)	57 (10.4)	25 (9.4)
<b>Difference (RRMS - PMS)</b>		1.2 %				6.1 %				1 %	

<sup>a</sup> % of total participants currently using complementary therapies - % of total participants using complementary therapies in the past.

<sup>b</sup> % of total participants planning to use complementary therapies in the future - % of total participants currently using complementary therapies.

<sup>c</sup> Total survey participants by clinical subgroup: RRMS (n = 547), PMS (PPMS or SPMS) (n = 266), transitioning between two stages or other forms (n = 34), CIS or no confirmed MS diagnosis (n = 12), and participants did not providing information on the MS form (n = 29).

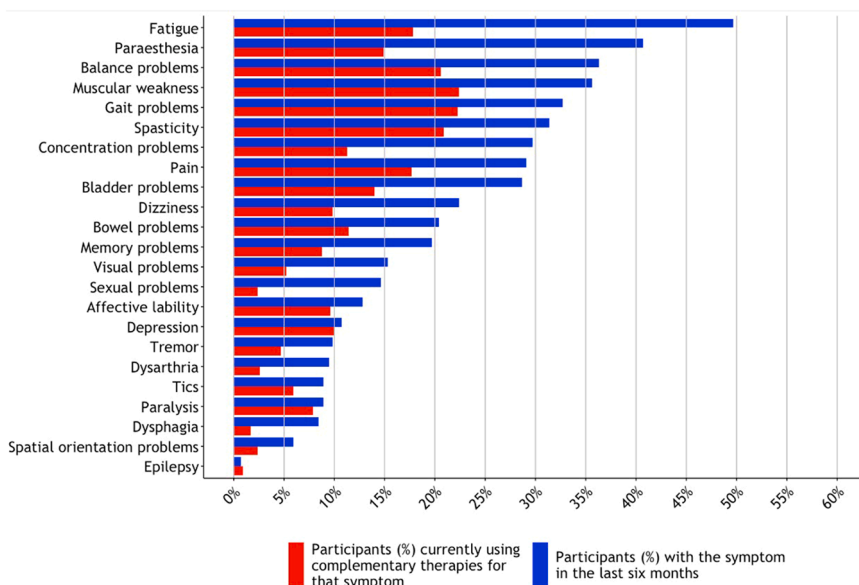


Fig. 2. Frequency of recent MS symptoms and current use of complementary therapies for MS symptom relief.

**Expectation on effectiveness of CTs on physiological complaints**      **Expectation on effectiveness of CTs on psychological complaints**      **Expectation on the safety of CTs**

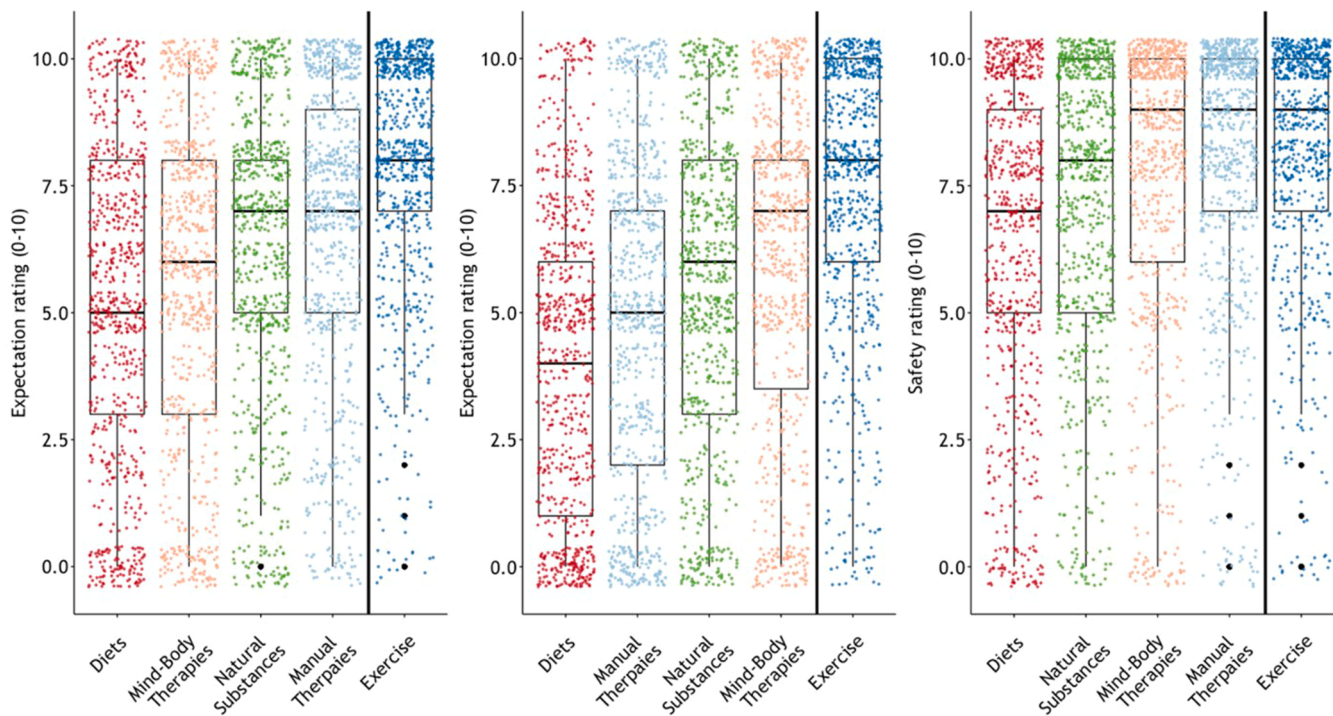


Fig. 3. Expectations of pwMS on the effects of complementary therapies. Median and the interquartile range (IQR) of participants' expectations. Each point represents a survey respondent.

the expectations of pwMS regarding complementary therapies, offering fresh insights into patient motivations to use these interventions. Fourth, the survey's development benefited from a participatory approach, involving both pwMS and experts in its design, ensuring relevance and comprehensiveness. To sum up, this collaborative effort, coupled with a mixed-methods approach and availability in multiple formats and languages, enhanced our study's inclusiveness and methodological rigour.

Our study also presented limitations. First, it was cross-sectional based on self-reported data, which could introduce recall bias or

inaccurate reporting (Khare and Vedel, 2019). However, selection bias was minimized because all participants who completed the general MS questionnaire also completed the complementary therapies section. This implies that completing the questionnaire was independent of the interest in complementary therapies. Also, anonymity prevented social desirability bias, which is when participants might respond in a manner they think is more socially acceptable. Concerning patient-reported data, we also collected clinical data from medical records for a sub-sample of 10 % of participants to verify data validity. Paper

**Table 4**

Open text analyses – views and values on complementary therapies.

Participants expressed a positive attitude towards complementary therapies, addressing their benefits for general well-being and physiological and mental health. Participants also mentioned that therapies based on self-efficacy can improve physiological and psychological limitations: "I find complementary therapies helpful for my general well-being and my physical and mental health."; "All therapies based on the principle of self-efficacy can improve physical and psychological limitations.", or "I am a big fan of complementary treatments".

A recurring theme was the contribution of complementary therapies to personal general well-being: "Complementary therapies help to strengthen personal well-being.". Participants mentioned a range of topics related to "well-being", such as positive mindset, mindfulness, self-efficacy, self-care, self-compassion, stress reduction, individual growth, resilience, faith, spirituality, special diets, enjoy eating, movement, physical activities in general, being in nature, meet people, exchange, talk, being addressed as a whole person with body, mind and soul, experience care, and being heard.

Critical views were centred around the belief that complementary therapies' effectiveness is based on the placebo effect or faith. Some participants lacked trust in these therapies, often due to negative experiences in their circles.

Find representative quotes in Supplemental Table 3.

questionnaires were also checked for completeness at the data center before being entered into the MS Registry platform by a research assistant. Second, the terms 'complementary', 'alternative', and 'integrative' therapies are inconsistently used and understood by pwMS, which could potentially impact the accuracy of the results. However, we provided clear definitions and examples of each type of complementary therapy to prevent confusion. Third, our survey collected responses from pwMS living in Switzerland, which limits the generalizability of our survey findings to a broader international context. Fourth, the survey did not gather information on the duration of complementary therapy use or partial responses to these therapies, which could have affected the results. This information is important because individual expectations and satisfaction can vary based on these factors. Including such data would provide deeper insights into the factors shaping patients' experiences and perceptions.

We are unaware of studies assessing the expectations of pwMS about complementary therapies. In our survey, diet was perceived as the least effective and safe complementary therapy. This is surprising, given that diets are popular among pwMS. For example, 42 % of pwMS in the USA adhered to special diets, such as anti-inflammatory diets (Silbermann et al., 2020). However, the potential confusion between diet and supplements could explain this discrepancy. Supplements and diets are often considered under the broad umbrella of complementary therapies but have distinct roles and perceived effectiveness and safety among pwMS.

Our survey found that 48 % of pwMS in Switzerland used at least one form of complementary therapy in the preceding six months. To our knowledge, no other studies have specifically examined the use of complementary therapies by pwMS in Switzerland. However, complementary therapies use is common in this country, with 25–30 % of adults using therapies like homeopathy, osteopathy, acupuncture, or herbal medicine. Prevalence rose from 24.7 % (95 % CI: 23.9–25.4 %) in 2012 to 28.9 % (95 % CI: 28.1–29.7 %) in 2017, especially among women, adults aged 25–64, and those with higher education, with higher rates in the Lake Geneva and central regions (Meier-Girard et al., 2022). Some therapies, such as traditional Chinese medicine and homeopathy, are covered by mandatory health insurance if provided by certified physicians, following a 2009 referendum that drove policy changes despite debates over scientific validity (The Federal Council 2017).

Our findings align with surveys in Western countries, showing 32 % usage in Belgium and 44 % in the USA (Huybregts et al., 2018; Kim et al., 2018). Other surveys in Western countries report higher prevalence, with around 80 % of pwMS in the USA and Germany using complementary therapies (Silbermann et al., 2020; Gotta et al., 2018). These variations may stem from different definitions of complementary therapies. Prevalence is even higher in other contexts, such as the Middle East and North Africa; for example, 89 % of chronic disease patients in Saudi Arabia use herbal and natural supplements (Metwally et al., 2023). A recent survey conducted in Morocco (Lotfi et al., 2024) found that 60.5 % pwMS used traditional and complementary therapies, of which 30.6 % used cupping, 30 % recited the Holy Quran, and 28.2 % used apitherapy. Complementary therapies use was higher in people suffering progressive MS and those lacking access to conventional

therapies. These findings underscore cultural influences on complementary therapies, differing from Switzerland, where the proportion of recent complementary therapy users was similar in RRMS and PMS participants. Recognizing these differences is vital for developing culturally sensitive healthcare and furthering research into their safety and efficacy.

The most typical reasons for complementary therapies use among pwMS in our survey are enhancing the quality of life and alleviating MS symptoms, which is consistent with a recent systematic review indicating that mindfulness, yoga, and reflexology were commonly used for managing MS symptoms, primarily mental (e.g., fatigue, depression, cognition) and physical (e.g., gait, muscle strength, spasticity and balance) aspects (Arji et al., 2022). Our open text analysis revealed a recurrent theme among participants: complementary therapies' contribution to general well-being, which aligns with several research papers concluding that pwMS feel that conventional medicine is impersonal and focused on disease rather than well-being (Tangkiatkumjai et al., 2020). Consequently, pwMS often use complementary therapies for non-specific purposes, such as strategies for coping with the disease and gaining more control over their health (Salamonsen et al., 2010; Skovgaard, 2016; Skovgaard et al., 2012).

Our study has several implications for clinical practice and research. First, given the widespread use of complementary therapies among pwMS, health professionals should proactively incorporate discussions about complementary therapy use during consultations. Second, it is essential to understand the expectations of pwMS regarding complementary therapies, as they may impact pwMSs' decisions and satisfaction with treatment. Third, future research should identify the factors that predict complementary therapies use among pwMS and define the interactions and synergies between complementary therapies and conventional medicine. Relevant factors for further investigation include the duration of complementary therapy use and partial response to these therapies. Fourth, there is a need for further patient education on complementary therapies, including diet and supplements.

## 5. Conclusions

Complementary therapies play a significant role in the management of MS as pwMS often use these therapies for various purposes. Expectations of pwMS about the effectiveness and safety of complementary therapies vary, indicating the need for further research and education of health professionals, patients, and the public in this area. Knowing the characteristics of pwMS who use complementary therapies, their general reasons and symptoms for using complementary therapies, and their expectations of the effects of complementary therapies can assist in customizing these treatments to provide individualized strategies that align with pwMS preferences.

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JB received honoraria for workshops on digital health and academic writing. The remaining authors declared that they had no conflict of interest.

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### CRediT authorship contribution statement

**Jesus Lopez-Alcalde:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Nina Steinemann:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Methodology, Investigation, Conceptualization. **Hannah Moll:** Writing – review & editing, Visualization, Software, Formal analysis, Data curation, Conceptualization. **Claudia Canella:** Writing – review & editing, Validation, Software, Formal analysis, Conceptualization. **Jürgen Barth:** Conceptualization. **Stefan Haegele-Link:** Writing – review & editing, Validation, Conceptualization. **Sarah Bolt:** Writing – review & editing, Validation, Conceptualization. **Claudia Baum:** Writing – review & editing, Validation, Conceptualization. **Gabriela Rettenmund Grob:** Writing – review & editing, Validation, Conceptualization. **Yuqian Yan:** Writing – review & editing, Validation, Conceptualization. **Viktor von Wyl:** Writing – review & editing, Validation, Supervision, Methodology, Conceptualization. **Claudia M Witt:** Writing – review & editing, Validation, Supervision, Resources, Project administration, Funding acquisition, Conceptualization.

### Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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### Supplementary materials

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### References

- Arji, G., Rezaeizadeh, H., Moghadasi, A.N., et al., 2022. Complementary and alternative therapies in multiple sclerosis: a systematic literature classification and analysis. *Acta Neurol. Belg.* 122, 281–303. <https://doi.org/10.1007/s13760-021-01847-3>, 2022/01/22.
- Chang, H.Y., HL, Chang, 2015. A review of nurses' knowledge, attitudes, and ability to communicate the risks and benefits of complementary and alternative medicine. *J. Clin. Nurs.* 24, 1466–1478. <https://doi.org/10.1111/jocn.12790>, 2015/03/03.
- Fisk, J.D., Ritvo, P.G., Ross, L., et al., 1994. Measuring the functional impact of fatigue: initial validation of the fatigue impact scale. *Clin. Infect. Dis.* 18 (Suppl 1), S79–S83. [https://doi.org/10.1093/clinids/18.supplement\\_1.s79](https://doi.org/10.1093/clinids/18.supplement_1.s79), 1994/01/01.
- Gotta, M., Mayer, C.A., Huebner, J., 2018. Use of complementary and alternative medicine in patients with multiple sclerosis in Germany. *Complement. Ther. Med.* 36, 113–117. <https://doi.org/10.1016/j.ctim.2017.12.006>, 2018/02/21.
- Hollander M., Wolfe D.A. and Chicken E. *Nonparametric Statistical Methods*. Wiley, 2013.
- Huybrechts, E., Betz, W., Devroey, D., 2018. The use of traditional and complementary medicine among patients with multiple sclerosis in Belgium. *J. Med. Life* 11, 128–136, 2018/08/25.
- Kaufmann, M., Salmen, A., Barin, L., et al., 2020. Development and validation of the self-reported disability status scale (SRDSS) to estimate EDSS-categories. *Mult. Scler. Relat. Disord.* 42. <https://doi.org/10.1016/j.msard.2020.102148>.
- Khare, S.R., Vedel, I., 2019. Recall bias and reduction measures: an example in primary health care service utilization. *Fam. Pract.* 36, 672–676. <https://doi.org/10.1093/fampra/cmz042>.
- Kim, S., Chang, L., Weinstock-Guttman, B., et al., 2018. Complementary and alternative medicine usage by multiple sclerosis patients: results from a prospective clinical study. *J. Altern. Complement. Med.* 24, 596–602. <https://doi.org/10.1089/acm.2017.0268>, 2018/03/03.
- Kuckartz, U., 2019. Qualitative text analysis: a systematic approach. In: Kaiser, G., Presmeg, N. (Eds.), *Compendium For Early Career Researchers in Mathematics Education*. Springer International Publishing, Cham, pp. 181–197.
- López-Alcalde J., Canella C., Yan Y., et al. PEMS project: participatory evidence synthesis in multiple sclerosis and complementary therapies. <https://osf.io/ys7xt/>. Licensed under a Creative Commons Attribution 4.0 International License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. (2023, accessed, 11 December 2023).
- Lorenc, A., Feder, G., MacPherson, H., et al., 2018. Scoping review of systematic reviews of complementary medicine for musculoskeletal and mental health conditions. *BMJ Open* 8, e020222. <https://doi.org/10.1136/bmjopen-2017-020222>, 2018/10/18.
- Lotfi, R., El kardoudi, A., Chigr, F., 2024. Multiple sclerosis in Morocco: epidemiological, clinical, and therapeutic profile. *Mult. Scler. Relat. Disord.* 81. <https://doi.org/10.1016/j.msard.2023.105347>.
- Mashola, M.K., Ajidahun, A.T., Korkie, E., Mothabeng, D.J., 2021. Management of spinal cord injury-related pain using complementary and alternative medicine: a scoping review protocol. *JB I Evid. Synth.* 20, 890–898. <https://doi.org/10.11124/jbies-21-00114>, 2021/11/20.
- Mastorci, F., 2023. Toward patient care: integrative and complementary approaches. In: Pingitore, A., Iacono, A.M. (Eds.), *The Patient As a person: an Integrated and Systemic Approach to Patient and Disease*. Springer International Publishing, Cham, pp. 119–129.
- Meier-Girard, D., Lüthi, E., Rodondi, P.Y., Wolf, U., 2022. Prevalence, specific and non-specific determinants of complementary medicine use in Switzerland: data from the 2017 Swiss Health Survey. *PLoS One* 17, e0274334. <https://doi.org/10.1371/journal.pone.0274334>, 20220914.
- Mentink, M., Verbeek, D., Noordman, J., et al., 2023. The effects of complementary therapies on patient-reported outcomes: an overview of recent systematic reviews in oncology. *Cancers* 15, 20230911. <https://doi.org/10.3390/cancers15184513>.
- Metwally, A.S., Atallah, I.A., Almutairi, I.K., et al., 2023. The prevalent use of complementary and alternative medicine among patients with chronic disease in the Al-Madinah population of Saudi Arabia. *Cureus* 15, e51130, 20231226. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10751177/>.
- Multiple Sclerosis International Federation. Complementary and alternative therapies, [www.msif.org/living-with-ms/complementary-and-alternative-therapies/](http://www.msif.org/living-with-ms/complementary-and-alternative-therapies/) (2021, accessed 15 November 2023).

- National Center for Complementary and Integrative Health (NCCIH). Complementary, alternative, or integrative health: what's in a name?, [www.nccih.nih.gov/health/complementary-alternative-or-integrative-health-whats-in-a-name](http://www.nccih.nih.gov/health/complementary-alternative-or-integrative-health-whats-in-a-name) (2021, accessed 15 November 2023).
- Ng, J.Y., Liang, L., Gagliardi, A.R., 2016. The quantity and quality of complementary and alternative medicine clinical practice guidelines on herbal medicines, acupuncture and spinal manipulation: systematic review and assessment using AGREE II. *BMC Complement. Altern. Med.* 16, 425. <https://doi.org/10.1186/s12906-016-1410-8>, 2016/10/30.
- Puhan, M.A., Steinemann, N., Kamm, C.P., et al., 2018. A digitally facilitated citizen-science driven approach accelerates participant recruitment and increases study population diversity. *Swiss Med. Wkly.* 148, w14623. <https://doi.org/10.4414/smww.2018.14623>, 2018/05/17.
- R Core Team, 2024. A Language and Environment for Statistical Computing, 4.3.0 ed. R Foundation for Statistical Computing, Vienna, Austria. Available from. <https://www.R-project.org/>.
- Salamonsen, A., Launsø, L., Kruse, T.E., Eriksen, S.H., 2010. Understanding unexpected courses of multiple sclerosis among patients using complementary and alternative medicine: a travel from recipient to explorer. *Int. J. Qual. Stud. Health Well-being* 5. <https://doi.org/10.3402/qhw.v5i2.5032>, 2010/07/10.
- Silbermann, E., Senders, A., Wooliscroft, L., et al., 2020. Cross-sectional survey of complementary and alternative medicine used in Oregon and Southwest Washington to treat multiple sclerosis: a 17-Year update. *Mult. Scler. Relat. Disord.* 41, 102041. <https://doi.org/10.1016/j.msard.2020.102041>, 2020/03/23.
- Skovgaard, L., Bjerre, L., Haahr, N., et al., 2012. An investigation of multidisciplinary complex health care interventions—steps towards an integrative treatment model in the rehabilitation of people with multiple sclerosis. *BMC Complement. Altern. Med.* 12, 50. <https://doi.org/10.1186/1472-6882-12-50>, 2012/04/25.
- Skovgaard, L., 2016. Use and users of complementary and alternative medicine among people with multiple sclerosis in Denmark. *Dan Med. J.* 63, B5159, 2016/01/05.
- Tangkiatkumjai, M., Boardman, H., Walker, D.M., 2020. Potential factors that influence usage of complementary and alternative medicine worldwide: a systematic review. *BMC Complement. Med. Ther.* 20, 363. <https://doi.org/10.1186/s12906-020-03157-2>, 2020/11/25.
- The Federal Council, 2017. Médecine complémentaire: Nouvelles Règles De Remboursement. <https://www.admin.ch/gov/fr/accueil/documentation/communiqués.msg-id-67050.html>.
- Wieland, L.S., Manheimer, E., Berman, B.M., 2011. Development and classification of an operational definition of complementary and alternative medicine for the Cochrane collaboration. *Altern. Ther. Health Med.* 17, 50–59.
- World Health Organisation (WHO), 2019. WHO Global Report On Traditional and Complementary Medicine. Geneva.
- Yadav, V., Shinto, L., Bourdette, D., 2010. Complementary and alternative medicine for the treatment of multiple sclerosis. *Expert. Rev. Clin. Immunol.* 6, 381–395. <https://doi.org/10.1586/eci.10.12>, 2010/05/06.