

## Supplementary S3

**Table S1. Characteristics of selected studies included in the scoping review (nursing interventions for CIPN)**

Treat-ments	Study <sup>1</sup> /Country (cultural context)	Study design	Outcome measures (Patient-reported and others)	Patients (gender, tumor entity)	Intervention group (IG)/control group (CG)	Who did conduct the intervention?	Concept	Results/Conclusion <sup>2</sup>
Phytotherapy	Arslan et al. 2020 [17]  Konya, Turkey	RCT	CIPN assessment tool (CIPNAT)	Women (n=60) receiving oxaliplatin-based treatment.	IG (n=30): <b>Henna application (HA)</b> for 8-10 hours, three 15-day treatment courses.  CG (n=30): routine care	Practitioner, health care staff	Henna's nectar exhibits biological activities such as antimicrobial, analgesic, anti-inflammatory, and antipyretic effects.	<b>HA</b> on hands and feet has a significant beneficial effect on peripheral neuropathy.  Overall: <b>HA</b> is a low cost and safe intervention, well tolerated by patients. Henna may be effective in preventing CIPN.
	Fallon et al. 2015  Edinburgh, UK  In S3 clinical guideline Supportive therapy for cancer patients, February 2020 [37]	Proof of concept study	Measurement of pain symptoms (total Brief Pain Inventory score and improvements in functionality and sensitivity (Quantitative Sensory Testing (QST)).	Patients with chronic PNP (n=51) including n=31 with CIPN.	Twice a day application of <b>menthol (Men)</b> crème 1% on the painful area. 4-6 weeks.	Not described	Activation of TRP (transient receptor potential) ion channels. Molecular receptors for cooling have been identified in sensory nerves with evidence for their upregulation in neuropathic pain models.	Therapy of CIPN: Of the 38 evaluable patients, 31 had a significant reduction in pain symptoms: median 47/ 34; p < 0.001), plus an improvement in functionality and sensitivity.  Overall: Expert consensus in S3 clinical guideline for consideration of topical therapy ( <b>ToT</b> ) of CIPN with 1% <b>Men</b> may be considered.
	Izgu et al.2019 [101]  Ankara, Turkey	Open-label, parallel-group, quasi-randomized controlled pilot study	Self-developed patient questionnaire (sociodemographic characteristics, type of cancer, treatment scheme, neuropathic symptoms), numeric rating scale (NRS), Douleur Neuropathique 4 Questions, Piper Fatigue Scale	46 cancer patients receiving oxaliplatin and suffering from CIPN and fatigue	IG (n=22) <b>Aromatherapy (AT)</b> hand and foot <b>Massage (M)</b> , 18 sessions á 40 minutes (peppermint, chamomile, rosemary essential oils 1,5 % in coconut oil), six weeks.  IG (n = 24): standard medical care	Principle investigator (PI) who is qualified in massage therapy.	Because of their analgesic, antinociceptive, neuroprotective, and blood circulation-enhancing effects, peppermint, chamomile, and rosemary essential oils were used.	At week six, the rate of neuropathic pain was significantly lower in the IG, when compared with the CG. The severity of pain based on NRS was significantly lower in the IG than in the CG at week 2, 4, and 6. At week 8, fatigue in the IG was significantly lower in the IG than in the CG.  Overall: <b>AT M</b> may be useful in the management of CIPN and fatigue.
	Li et al. 2019 [35]  Zhejiang, China	Meta-analysis	World Health Organization	Cancer Patients (>18 years),	IG: All types of chinese <b>herbal medicine (Phy)</b> in	Not reported	Influencing qi stagnation, promote blood circulation, dredging collaterals to	Chinese <b>Phy</b> was found to improve SNCV (sensory nerve conduction velocity) and MNCV (motor nerve conduction velocity).

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Treat-ments	Study <sup>1</sup> /Country (cultural context)	Study design	Outcome measures (Patient-reported and others)	Patients (gender, tumor entity)	Intervention group (IG)/control group (CG)	Who did conduct the intervention?	Concept	Results/Conclusion <sup>2</sup>
		20 trials including 1481 participants. Number of patients in each arm was more than 15	(WHO) grade, CIPN grade or Levi's grade].	Chemotherapy, CIPN diagnosed by clinical assessment.	TCM there of <b>hand-footbath (HFB)</b> , compress, decoction, Radix aconiti, tuber aconiti, salvia, ginger  CG: No treatment, placebo, conventional therapeutic agents		remove meridian obstruction, improve microcirculation in nervous system, reducing the nerve injury.	For all grade CIPN as well as high grade CIPN - preventive and curative.  Overall: Evidence is not sufficient to draw definitive conclusion.
	Noh et al. 2018 [36]  Seoul, Republic of Korea (South Korea)	Systematic Review of RCTs  28 trials, 2174 participants.	Clinical improvement, incidence rate, and nerve conduction study (NCS)	18 years or older, diagnosed with cancer, and CIPN	IG: All types of <b>phytotherapy (Phy)</b> used for medicinal purposes (e.g., oral, intravenous infusion using fluid, intravenous injection, fumigation, external application, or hand and foot baths)  CG: no treatment, a placebo or conventional therapeutic agents	Not described	<b>Phy</b> based on unique theories of Yin and Yang, the five elements, and the visceral manifestation theory	Preventive Effects: <b>Phy</b> for <b>hand and foot baths (HFB)</b> or fumigation: significantly effective in decreasing the incidence rate.  Therapeutic Effects: <b>Phy</b> for <b>HFB</b> or fumigation: The wenloutong formula (contains Aconitituber) and the wenjing hu-xue ton-gluo formula (contains aconiti tuber) were as significantly effective as warm water baths. The effectiveness rate of the wenjing tongluo formula was significantly improved in comparison to the placebo <b>HFB</b> . The effectiveness rate of the wenyang tongbiformula presented a significant improvement in comparison-to Vitamin B12 ( <b>VB</b> ).  Overall: <b>Phy</b> have potentially preventive and/or therapeutic effects for CIPN. Due to the characteristics of CIPN—the direct application would be considered an effective dosage form.
	Noh & Park 2019 [50]  Seoul, South Korea	RCT	CIPN assessment tool, Hospital Anxiety-Depression scale (HADS), Peripheral skin temperature	Gynecologic cancer patients (n=66) who received chemotherapy (Taxane, platinum group)	IG (n=32): <b>Aroma foot-reflexology (AT-FR)</b> three times a week, 15 min for each foot over six weeks (mandarin, black pepper, pine, and tea tree essential oils in argan oil, 3 % dilution).	Participants themselves after instruction, biweekly phone monitoring by researcher.	Reflexology promotes blood circulation and lymphokinesis, metabolism. and physical and mental relaxation. Increased skin temperature induces psychological relaxation.  Essential Oils: Black pepper improves blood	No harm or unanticipated risk.  Statistically significant reduction of PNP symptoms (t=5.26, p < .001), increased skin temperature (t=-4.41, p < .001) and in IG.. Anxiety and depression decreased in the experimental group (p < .001). No significant difference between IG and CG with regard to mild to severe anxiety and depression.  Overall: <b>AT-FR</b> can reduce CIPN.

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					CG (n=31): identical aroma foot-reflexology 6 weeks later		circulation and has pain reducing effects, pine improves relaxation, mandarin mood elevation.	
	Rostami et al. 2019 [75]  Teheran, Iran	RCT	Functional Assessment of Cancer Therapy/Gynecologic Oncology Group (FACT/GOG) - Neurotoxicity score	Cancer patients (n= 34) between 18 to 80 years, chemotherapy, CIPN  Exclusion: Diabetes, brain metastasis, renal failure, carpal tunnel syndrome	IG (n=18): <b>topical c. colocynthis (TCC)</b> (bitter apple fruit extract in sesam oil) two times per day for 2 months  CG (n=16): Placebo oil (sesam oil)	Participants themselves after instruction	Traditional Persian medicine. <b>TCC</b> as a therapeutic agent with simultaneous antioxidative and anesthetic effects	No significant improvement in the total score of FACT/GOG-Ntx scale and placebo groups.  No significant improvement in FACT/GOG-Ntx in the sensory, motor, hearing, and functional domains in the two study groups.  Overall: <b>TCC</b> oil failed to improve the symptoms of CIPN compared with Placebo.
Movement therapy	Steimann et al. 2011, Lehmrad, Germany  In S3 clinical guideline Supportive therapy for cancer patients, February 2020 [37]	Overview Article	Subjective assessment of patients	Cancer Patients	<b>Sensorimotor training (SM), tactile stimulation (TS), exercises (E)</b>	Not described	<b>SM, TS:</b> To improve or normalise nerve activity through mechanical stimuli.	81% of patients consider <b>TS</b> to be very effective or effective.  Overall: Expert consensus that <b>SM</b> , e.g., been bath for prevention of CIPN can be done. Instructions for regular functional training can already be given. Regular movement training, especially of the finger and toe functions.

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Cryotherapy	Bandla et al. 2019 [18]  Singapore, Singapore	Proof-of-concept study	Total neuropathy score (TNS), nerve conduction studies (NCS)	Cancer patients (n=26) receiving taxane (21–80 years); no history of neuropathy; Eastern Cooperative Oncology Group (ECOG) performance status 0; and no history of hospitalization in the past 6 months	IG (n=13): four-limb <b>Cryocompression (CC)</b> , 16 °C and cyclic pressure of 5–15 mmHg, with each chemotherapy infusion for a maximum of 12 cycles.  CG (n=13): continuous-flow cooling and no cooling.	Not described	Coolant temperature of 22°C was determined to be the lowest tolerable temperature in healthy volunteers for a duration of 3 h ( <b>CC</b> attains a lower temperature faster than <b>CT</b> indicating that compression increases the rate of cooling.	<b>CC</b> demonstrated significantly greater skin temperature reductions compared to continuous-flow cooling and control.  <b>CC</b> may potentially improve the efficacy of preventing CIPN compared to continuous-flow limb cooling.  Overall: <b>CC</b> is a safe and tolerable therapy for the relief of CIPN in cancer patients undergoing taxane treatment. However, this remains to be demonstrated in further studies.
	Beijers et al. 2020 [39]  Veldhoven, Netherlands	RCT	CIPN20	Cancer patients (n=180)  Tumor: Colorectal: 53 Prostate: 2 Breast: 31 Other: 4	IG (n=90): <b>Frozen glove (FG)</b> and sock for 15 min prior to and 15 min after completion of the paclitaxel.  CG (n=90): Care without FGs	Patient himself in this study	Not described	IG experienced significantly reduced tingling in fingers/and less trouble opening a jar or bottle due to loss of strength in hands.  Overall: Wearing <b>FGs</b> might reduce some neuropathy symptoms in the hands. However, one-third of the IG discontinued the study before the end of treatment. Future studies should focus on the method of limb <b>Hypo</b> to prevent CIPN.
	Griffiths et al. 2018 [19]  Chicago, Illinois, USA	RCT	Neuropathic Pain Symptom Inventory, Brief Pain Inventory, quantitative sensory testing.	Breast cancer patients (n=29) receiving paclitaxel	IG: <b>Cryotherapy (CT)</b> . Frozen glove and sock for 15 min prior to and 15 min after completion of the paclitaxel.  CG: participants as their own paired control.	Clinicians	Not described	No significant differences in measures of neuropathy or pain between treated and untreated hands or feet.  High drop-out rate, more than half of the patient sample could not well tolerate <b>CT</b>  Overall: This RCT was unable to demonstrate benefit of <b>CT</b> .
	Sundar et al. 2017 [40]  Singapore, Singapore	Prospective pilot Study	Visual analog pain scale (VAS), subjective tolerance scale,	Breast cancer patients (n=20) scheduled to receive adjuvant weekly	Limb <b>Hypothermia (Hypo)</b> sessions comprised of a pre-cooling period (1 h), continued with paclitaxel infusion and	Not described	Reduction of nerve blood flow	Continuous-flow limb Hypothermia was well tolerated by all patients. Differences in nerve conduction parameter did not reach significance.

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			the Shivering Assessment Scale nerve conduction studies (NCSs)	paclitaxel chemotherapy for 12 cycles	a post-cooling period (on average 30 min after the end of paclitaxel infusion)			Overall: New opportunity in neuroprotection and preventing CIPN via a simple, non-invasive, and non-pharmacological method.
Manipulative therapies	Izgu et al. 2019 [41]  Ankara, Turkey	RCT	Self-Leeds Assessment of Neuropathic Symptoms and Sign (S-LANSS), EORTC QLQ CIPN20. Nerve conduction studies (NCS).	Breast cancer patients (n=40) receiving adjuvant paclitaxel	IG: Classical <b>massage (M)</b> before each paclitaxel infusion  CG: patients received only usual care	Principal investigator with nursing background, who was qualified and experienced in <b>M</b> therapy.	Classical <b>M</b> (Swedish <b>M</b> ) affects regulation of muscles, joints, tendons and ligaments in the body by manipulation of soft tissues with effleurage, petrissage, friction and tapotement techniques.	CIPN was lower in the IG compared to the CG at week 12.  Sensory and motor sub-scales scores of the QoL measure showed statistically significant differences over time in favor of IG.  Sensory action potential amplitude of the median nerve was significantly higher and the tibial nerve latency was significantly shorter in IG at week 12.  Overall: Classical <b>M</b> successfully prevented CIPN, improved the QoL, and showed beneficial effects on the NCS findings.
	Sarisoy, et al. 2020 [76]  Gaziantep, Turkey	RCT	VAS, Doleur Neuropathic pain (DN4), Pittsburg Sleep quality Index (PSQI)	Patients (n=40) with non-hodgkin-lymphoma	IG (n=20): <b>Foot-massage (FM)</b> 3 times a week, each foot 10 minutes, over four weeks with 2ml of olive oil  CG (n=20): Clinical routine.	Applied from the researchers (nurses)	Not described	Pain score at first interview was significantly higher than after four weeks  Pain in the CG is significantly higher than in the IG group.  Overall: <b>FM</b> has a positive effect on CIPN pain.
Others	Kotani et al. 2021 [43]  Kanokoden, Chikusa-ku, Nagoya, Japan	Double-blind phase 2 trial	PROs were assessed by using the CTCA v4.0 at each cycle. The primary outcome was the difference in the incidence of Grade $\geq 2$ CIPN.	Patients (n=56) with early and recurrent breast cancer (with no prior paclitaxel exposure) receiving weekly paclitaxel with 80 mg/m <sup>2</sup>	Intervention: <b>compression (Com)</b> therapy (90 min) with surgical gloves – two one size smaller gloves on one hand Control: two normal-size gloves on the other hand.	Patients were instructed by physicians and nurses.	Previous studies confirmed that <b>Com</b> reduces CIPN, but its effectiveness regarding prevention has not been assessed under circumstances which aimed to minimize bias.	<b>Com</b> was not effective in preventing CIPN.  Overall: <b>Com</b> therapy with surgical gloves does not significantly reduce the incidence of paclitaxel-induced CIPN. Further research is needed in this area, as <b>Com</b> , as a low-cost and safe therapy, has been evaluated as effective in other studies.

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## List of abbreviations

Acetyl-L-carnitine	AIC	External applications	EAP	Massage	M	Reflexology	R
Acupressure	AP	Fatty acids	FA	Meditation	Me	Rehabilitation intervention	RI
Acupuncture	A	Fine motor training	FMT	Menthol	Men	Reiki	Rei
Aerobic	Ae	Foot massage	FM	Mind-body modalities	MBM	Relaxation	Rel
Alpha-lipoic acid	ALA	Frozen gloves	FG	Mind-body therapies	MBT	Resistance training	RT
Aromatherapy	AT	Footbath	FB	Movement therapies	MT	Rhythmical embrocations	RE
Balance training	BT	Foot reflexology	FR	Music therapy	MuT	Scrambler therapy	ST
Cardiovascular exercise	CardE	Glutamine	G	Natural products	NP	Self-management strategies	SMT
Chinese medicine	CH	Goshajinkigan	Go	Nerve conduction studies	NCS	Sensorimotor training	SM
Closed kinematic chain exercises	CKC-E	Hand and foot baths	HFB	Non-pharmacological interventions	NPI	Sports therapy	SpT
Cognitive behavioural intervention	CBI	Healing touch	HeTo	Nurse-led follow-up	NLF	Support groups	SG
Complementary and Alternative Medicine	CAM	Heat application	He	Nutritional therapy	NT	Strength training	STr
Complementary and Integrative Medicine	CIM	Henna application	HA	Occupational therapy	OT	Tactile stimulation	TS
Complementary treatments	CTs	Homeopathy	Ho	Omega-3	O3	Tai Chi	TC
Compression	Com	Humor therapy	HT	Pain management strategies	PMS	Therapeutic touch	TT
Coordination training	CoT	Hydroelectric bath	Heb	Passive mobilisation	PM	Topical C. colocynthis	TCC
Cryocompression	CC	Hydrotherapy (Kneipp)	HTK	Patient education	PE	Topical therapy	ToT
Cryotherapy	CT	Hyperthermia	HyT	Physical activity	PhA	Traditional Chinese Medicine	TCM
Cupping	C	Hypnosis	H	Physical therapy	PT	Transcutaneous electrical nerve stimulation	TENS
Cycling	Cy	Hypothermia	Hypo	Physiotherapy	PhyT	Vitamin B12	VB
Dietary modification	DM	Imagery	I	Phytotherapy (incl. herbal medicines, botanical agents)	Phy	Vitamin B complex	VBC
Dietary supplements	DS	Integrative therapies	ITs	Positioning	Po	Vitamin E	VE
Distraction therapy/training	DT	Kneipp therapy	KT	Problem-solving therapy	PST	Walking	W
Electroacupuncture	EA	Magnesium replacement	MR	Progressive muscle relaxation	PMR	Whole-body vibration	WBV
Electrotherapy	ET	Magnet/Laser therapy	MLT	Psychosocial approaches	PA	Yoga	Y
Exercise (all types)	E	Manual therapy	MaT	Qi Gong	QG		

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