Supplementary Material S2. Item-level feasibility, usability, tolerability, satisfaction and professional workflow indicators

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This supplementary material provides the full item-level results for participant-reported usability, headset comfort and tolerability, satisfaction, and professional usability and workflow indicators collected during the REDOCVR implementation study.

All questionnaires were originally administered using Likert-type response formats. Participant-reported instruments used 5-point response scales, and professional usability items used 5-point agreement scales. To facilitate comparability across instruments and improve readability, all responses were linearly transformed to a standardised 0–100 metric, with higher values indicating more favourable ratings. Negatively worded items were reverse-coded before transformation.

Composite scores were calculated according to the structure of each instrument and are reported above each table as mean ± standard deviation. Item-level results are presented descriptively as mean ± standard deviation. Patient-reported findings correspond to the completed REDOCVR research assessment cohort with available post-intervention feasibility data (n = 103). Professional findings are descriptive because of the smaller implementation sample (n = 11).

Supplementary Table S2a. Participant-reported content usability indicators

Composite content usability score: 82.32 ± 15.91

Item	English translation	Mean ± SD
USAB-1	I think I would like to use this programme frequently.	88.35 ± 23.44
USAB-2	I think the programme is too complex.*	74.27 ± 32.36
USAB-3	I think the exercises are more entertaining with the headset than conventionally.	83.50 ± 27.69
USAB-4	I think the simulation options are clear and well-integrated.	91.26 ± 20.32
USAB-5	I think some options are difficult to follow.*	71.84 ± 35.30
USAB-6	I think people would learn to use this system easily.	83.98 ± 27.31
USAB-7	I felt comfortable using this system.	89.56 ± 21.16
USAB-8	I had to learn many things before I could use the system.*	75.73 ± 35.43

Note: Scores are reported on a 0–100 scale. Higher values indicate more favourable usability ratings. Items marked with * were negatively worded and reverse-coded before transformation.

Supplementary Table S2b. Participant-reported headset comfort and tolerability indicators

Composite headset comfort and tolerability score: 72.44 ± 22.30

Item	English translation	Mean ± SD
TOLE-1	The headset was very heavy and uncomfortable.*	62.14 ± 35.85

TOLE-2	The use of the headset and controllers was very complicated.*	79.85 ± 29.72
TOLE-3	I felt fatigue in my arms and fingers.*	53.64 ± 38.57
TOLE-4	I experienced visual discomfort, eye strain.*	79.61 ± 31.46
TOLE-5	I felt dizzy, cybersickness.*	77.67 ± 32.64
TOLE-6	I experienced a headache.*	83.25 ± 29.78
TOLE-7	I had to stop the simulation due to the aforementioned discomforts.*	83.50 ± 30.63
TOLE-8	I think it would be comfortable to use this headset for a long time.	59.71 ± 33.44

Note: Scores are reported on a 0–100 scale. Higher values indicate greater comfort and tolerability. Items marked with * were negatively worded and reverse-coded before transformation.

Supplementary Table S2c. Participant-reported satisfaction indicators

Composite satisfaction score: 81.70 ± 12.81

Item	English translation	Mean ± SD
SAT-1	Overall, how do you rate the VR experience during the chronic pain management sessions?	87.14 ± 18.14
SAT-2	What is your opinion on the usefulness of VR for pain reduction?	81.31 ± 17.05
SAT-3	Is the visual and image quality of VR satisfactory for you?	89.81 ± 13.75
SAT-4	Is interaction with VR during the sessions easy to understand and use?	88.35 ± 15.97
SAT-5	How do you rate your physical comfort while using VR?	77.67 ± 22.66
SAT-6	Has VR improved your concentration and your ability to manage pain?	68.45 ± 24.99
SAT-7	What do you think about the variety of VR content available for your chronic pain management sessions?	82.52 ± 18.80
SAT-8	How do you rate the support and guidance you received during the VR sessions?	92.48 ± 14.78
SAT-9	Is the duration of the VR sessions adequate for your objectives?	75.24 ± 24.88
SAT-10	Do you intend to continue using VR in your pain management sessions?	74.03 ± 25.47

Note: Scores are reported on a 0–100 scale. Higher values indicate greater satisfaction with the XR-supported sessions.

Supplementary Table S2d. Professional usability and workflow indicators

Professional SUS total score: 68.75 ± 11.35

Item	English translation	Mean ± SD
PROF-1	I believe that this programme will help improve the quality of patient care.	88.64 ± 13.06
PROF-2	I believe that the programme interface is intuitive for the user.	79.55 ± 18.77
PROF-3	I believe that the programme can be easily integrated into daily care practice.	65.91 ± 37.54
PROF-4	I believe that the functions and features of the simulation are clear and relevant to patient care.	84.09 ± 12.61
PROF-5	Some of the functionality of this system may be difficult for patients to understand or use.*	70.45 ± 18.77
PROF-6	I believe that patients will be able to learn to use this system easily.	77.27 ± 23.60
PROF-7	You have felt comfortable using this system for patient care.	84.09 ± 20.23
PROF-8	You have needed additional time to learn to use this system correctly.*	59.09 ± 30.15

Note: Scores are reported on a 0–100 scale. Higher values indicate more favourable professional perceptions. Items marked with * were negatively worded and reverse-coded before transformation. Professional findings are descriptive because of the small sample size (n = 11).