

Effectiveness of smartphone-based applications for self-management of chronic pain: a systematic review and meta-analysis

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Introduction:

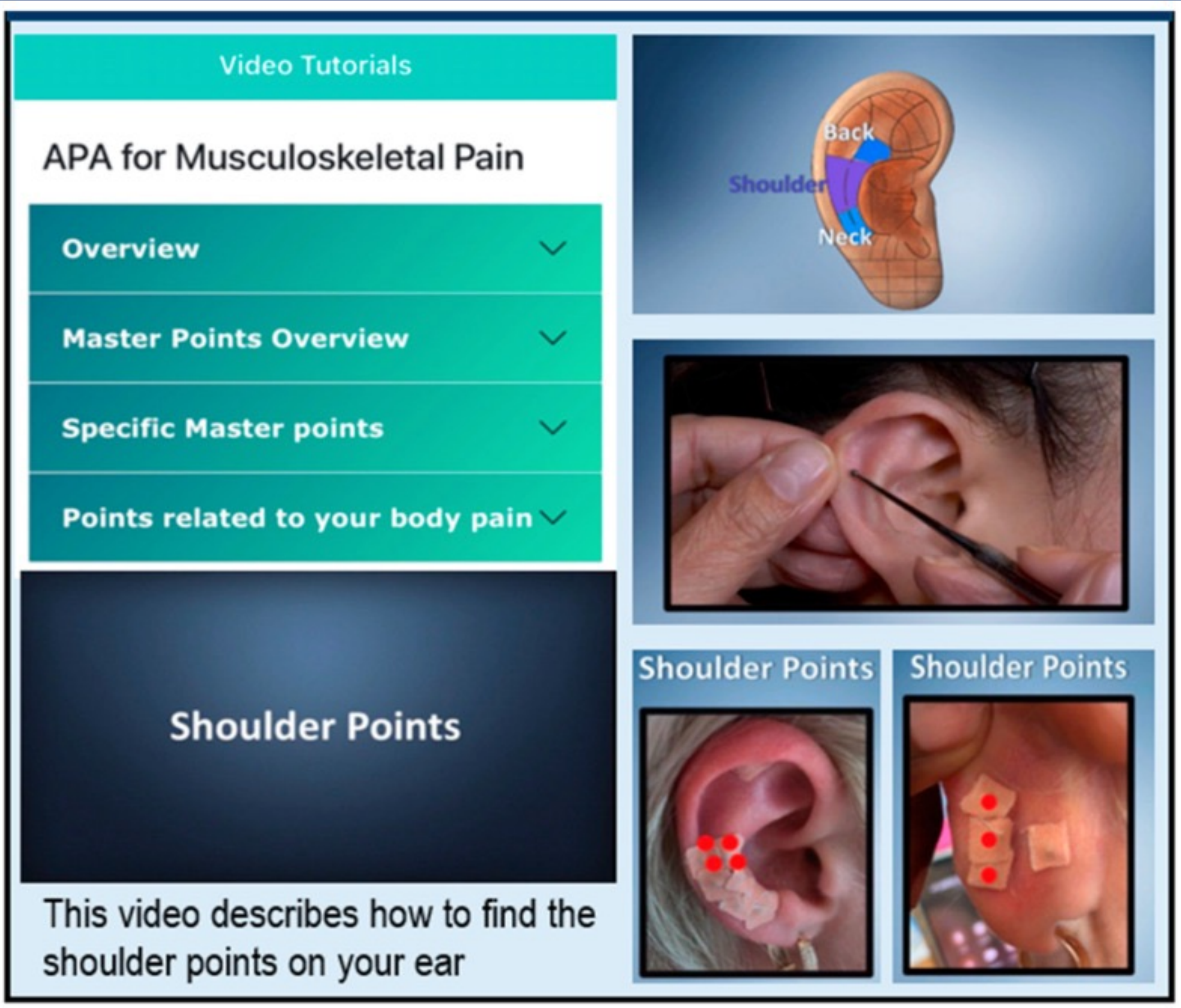
- There are millions of individuals worldwide suffering from chronic pain.
- For patients, this can be extremely debilitating and thus affect their daily lives.
- In recent years, smartphone-based applications (apps) have emerged as possible options for self-management of chronic pain.
- This systematic review and meta-analysis aims to assess the effectiveness of smartphone-based apps in managing chronic pain with a special focus on pain intensity, functional outcomes, and quality of life.

Materials & Methods:

- A comprehensive literature search was conducted across multiple databases from inception – July 2023
- Keywords of "pain" and "smartphone OR phone or mobile" were used to search.
- Studies evaluated smartphone-based applications for the treatment of chronic pain.
- Case reports, case series, cohort studies, and randomized controlled trials were eligible for inclusion.
- The study evaluated factors including functional outcomes, pain intensity, and quality of life (QoL).

Smartphone applications can help reduce pain, improve functional outcomes, and improve quality of life for individuals suffering from chronic pain.

FIGURE: Example mobile auricular point acupressure smartphone app (mAPA) to self-manage chronic musculoskeletal pain



1. Yeh CH, Kawi J, Grant L, et al. Self-Guided Smartphone Application to Manage Chronic Musculoskeletal Pain: A Randomized, Controlled Pilot Trial. Int J Environ Res Public Health. 2022;19(22):14875. Published 2022 Nov 11. doi:10.3390/ijerph192214875

Results:

- 12 randomized control trials and 8 prospective cohort studies were suitable for the meta-analysis.
- Data analysis indicated the following: (1) improved functional outcomes (pooled effect size 0.32, 95% CI [0.15, 0.50]), (2) reduction in pain intensity (pooled effect size -0.45, 95% CI [-0.71, -0.20]), and (3) increased QoL (pooled effect size 0.27, 95% CI [0.10, 0.44]).

Discussion:

- Smartphone apps can be useful for reducing pain and improving functional outcomes and QoL in individuals with chronic pain.
- The ease of access and low barrier to entry to utilizing smartphone apps allow patients to actively take ownership of their pain pathologies.
- This promotes patient-centered team care and patient engagement.
- The use of smartphone-based apps offers opportunities for real-time data tracking and subsequently allowing precision treatment strategies
- However, the effectiveness of smartphone apps may be influenced by user-friendliness, technological literacy, and user engagement.
- Future studies should focus on identifying the optimal features and design elements of smartphone-based apps to improve patient pain outcomes.

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1. Yeh CH, Kawi J, Grant L, et al. Self-Guided Smartphone Application to Manage Chronic Musculoskeletal Pain: A Randomized, Controlled Pilot Trial. Int J Environ Res Public Health. 2022;19(22):14875. Published 2022 Nov 11. doi:10.3390/ijerph192214875

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