Public interest in external counterpulsation (ECP) therapy among the elderly in Malaysia: An infodemiology study using Google trends

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ABSTRACT

Introduction: External Counterpulsation (ECP) is a non-invasive regenerative biomedical therapy. The ECP increases coronary perfusion through diastolic augmentation and reduces angina and improves functionality in heart failure. ECP may sometimes be referred as enhanced ECP (EECP). As Malaysia's population ages, the burden of cardiovascular disease (CVD) is expected to rise. Despite its clinical promise, the government utilization of the device is limited. Anecdotal experience from our group found that the awareness and interest from the public towards ECP is high but scholarly notation on these remain limited. Infodemiology, the science of distribution and determinants of information on the internet, is increasingly used to monitor health information-seeking behaviour and public awareness. This offers a novel lens to assess public engagement with emerging therapies. This study uses Google Trends to evaluate public interest in ECP therapy in Malaysia from 2004 to 2025, with a focus on elderly-related search behaviour and regional disparities. **Materials and Methods:** This infodemiological study utilized Google Trends. Data were extracted from https://trends.google.com. Data were in the form of normalized search volume indices (SVIs) for specific keywords over time and across geographic regions. SVIs range from 0 to 100, representing the relative popularity of a search term. The search timeframe was from January 2004 to July 2025. The primary keywords included "external counterpulsation," "ECP therapy," "EECP therapy," and "non-invasive heart treatment." When focusing on the elderly populations, proxy terms such as "heart treatment for elderly," "old age heart therapy," and "non-surgical heart treatment" were also analyzed. Data were collected under the "all" category and restricted to web searches within Malaysia. Time series analysis was conducted to identify trends and peaks, while geographic analysis assessed regional variations. Event overlays were used to correlate search spikes with clinical trials, media coverage, or commercial promotions. **Results:** Search interest in ECP therapy was negligible before 2012, with intermittent spikes in 2012, 2015–2016, and a sustained upward trend beginning in 2018, peaking in mid-2023. The term "external counterpulsation" peaked in March 2016, likely due to commercial promotion by ECP Malaysia. "EECP therapy" showed isolated spikes in 2009, 2017, and 2021, but lacked sustained engagement. Proxy terms targeting elderly populations showed minimal activity, with only brief surges in 2007 and 2009, indicating low public awareness of age-specific cardiac therapies. Geographically, the highest interest was observed in Negeri Sembilan, Selangor, Penang, and Johor. From an ageing perspective, the lack of sustained interest in elderly-specific terms suggests a gap in targeted health communication. Despite the elderly being the primary beneficiaries of ECP, their representation in online search behaviour appears limited, possibly due to digital literacy barriers or lack of targeted outreach. **Conclusion:** Public interest in ECP therapy in Malaysia has grown over the past decade but remains episodic and regionally concentrated. This highlights the need for targeted awareness campaigns, improved digital health literacy among older adults, and broader integration of ECP into national cardiac care strategies. Infodemiology proves to be a valuable tool in identifying public awareness gaps and guiding health communication and policy planning.

Keywords: External counterpulsation, enhanced external counterpulsation, regenerative cardiology, counterpulsation, cardiac device, cardiac rehabilitation