The photographic knee pain map: Locating knee pain with an instrument developed for diagnostic, communication and research purposes.

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1. Introduction

The majority of published knee pain maps are based on artist’s drawings, and this is despite the fact that patients’ knee pain is rarely so simple or so clear cut. Patients have varying degrees of pain, pain at different times, and pain that changes over time. The accuracy of artist’s drawings to represent knee pain zones thus leaves much to be desired. The photographic knee pain map (PKPM) developed in this study is based on photographs of patients taken at the same time that they report their knee pain. The photographs were taken as part of their diagnostic workup, and the patients were asked to mark the areas of pain using black felt-tip pens. The aim of the research was to develop an instrument capable of recording the location of knee pain which was both valid and reliable. It was intended for use as an aid in diagnosis, communication and research purposes.

2. Study design

Zones were generated in a representative area of a pair of knees from photographs of patients with knee pain. These zones were identified to create a photographic knee pain map (PKPM). The PKPM comprises ten distinct zones; nine anterior and one posterior zone. The nine anterior zones were accounted for the size proportions of underlying anatomical structures (see Figure 4). The PKPM template was designed to enable the PKPM to be used in both clinical and research settings.

3. Reliability assessment

Reliability is the ability of an instrument to record the same result with a high degree of consistency. It can be assessed using the same methods as validity of an instrument. The PKPM was designed to be used in both clinical and research settings. The PKPM comprises ten distinct zones; nine anterior and one posterior zone. The nine anterior zones were accounted for the size proportions of underlying anatomical structures (see Figure 4). The PKPM template was designed to enable the PKPM to be used in both clinical and research settings.

4. Validity testing

Validity is established by comparing an instrument with another instrument against a gold standard. Since no such gold standard exists for knee pain location, the PKPM was compared to the Thompson’s knee pain map. The Thompson’s knee pain map was developed by Thompson et al. 

5. Results

The PKPM was used on patients with data on 151 knees (35 + 58 + 58). Inter-rater reproducibility was good (k=0.64, p<0.001) for zones of the PKPM. Extensor tendonopathy showed the best agreement (k=0.95, p<0.001). The PKPM comprises ten distinct zones; nine anterior and one posterior zone. The nine anterior zones were accounted for the size proportions of underlying anatomical structures (see Figure 4). The PKPM template was designed to enable the PKPM to be used in both clinical and research settings.

6. Conclusions

In conclusion, this paper is the first to present a knee pain map that reports instrument generation, validity and reliability. It is intended for use as an aid in diagnosis, communication and research purposes.