

Open-Source Anatomical Illustration for Digital Back Pain Documentation: Development and Evaluation

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Abstract

Background: Accurate documentation of back pain is essential for effective diagnosis and treatment; however, conventional paper-based methods often lack precision and standardization, limiting their clinical utility.

Objective: To develop and evaluate an anatomically accurate, digitally segmented, open-source vector illustration of a sex-neutral human body (front and back views) designed to facilitate standardized documentation of back pain and alignment with medical coding systems such as SNOMED CT.

Methods: An interdisciplinary team employed a rigorous, iterative methodology informed by standard anatomical references to create the foundational illustration, emphasizing anatomical precision and digital compatibility. A representative survey-based user study (N=298) was conducted in the UK through the Prolific platform to evaluate perceived usefulness, confidence in accurately marking hypothetical pain regions (not actually drawing on the illustration), aesthetic appeal, and gather improvement suggestions. Feedback from the survey guided final refinements to the illustration, which is published under the CC BY 4.0 license in this work.

Results: Participants reported high confidence in their ability to identify pain regions using the developed vector illustration and found the design visually appealing. User feedback highlighted the need for improved visual clarity, leading to adjustments in color contrast and anatomical proportions. Aesthetic concerns, such as the removal of areolae and simplification of facial features, were also addressed to enhance user comfort and neutrality.

Conclusions: The resulting anatomically accurate vector illustration provides a robust foundation for digital documentation tools aimed at improving back pain documentation accuracy, patient-provider communication, and integration with electronic health records. By releasing it under the CC BY 4.0 license, we encourage broad adoption and community-driven improvements.

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Original Manuscript

Original Paper

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Keywords: Back pain documentation; Anatomical illustration; Digital health; SNOMED CT; Pain assessment; Patient-provider communication; Vector graphics; Electronic health records; Open-source tools

Introduction

Back pain is one of the most common musculoskeletal conditions worldwide, affecting a substantial proportion of the global population [1,2]. It remains one of the leading causes of disability worldwide, contributing significantly to the global disease burden [3]. Accurate assessment and documentation of back pain are critical for effective diagnosis, treatment planning, and outcome monitoring. Traditionally, patients have used paper-based pain drawings to mark areas of discomfort, but these methods vary in quality and standardization and may lack the detail needed for advanced clinical integration [4]. Digital pain drawings have emerged as a more consistent and reliable alternative, enabling improved data integration, enhanced quantification of pain areas, and longitudinal tracking [5–7]. Nonetheless, many existing digital tools still lack anatomical precision, standardization, or open accessibility, hindering broader adoption [8–10].

Modern patient management benefits from highly standardized documentation to support accurate diagnosis, treatment planning, and outcome monitoring [11]. Historically, the interpretation of paper-based pain drawings has been inconsistent, and these analog methods posed challenges for data integration [12]. In response, frameworks such as SNOMED CT and ICD-11 have helped enhance semantic interoperability and clinical data exchange, thereby improving the precision and utility of pain documentation [13,14]. The transition to digital pain drawings offers the potential for more accurate, scalable, and integrable data capture [5,15]; however, early digital solutions often lacked detailed anatomy or standardized labeling schemes, complicating integration with electronic health records (EHRs) and research databases [5]. Without clear links to widely recognized anatomical and clinical terminologies, such tools struggle to contribute effectively to epidemiological studies or decision support systems [5]. Modern advancements in usability and design encourage adoption among patients and clinicians, particularly when aligned with standardized terminologies [6,16,17].

Recent efforts have aimed to develop anatomically accurate digital representations of the human body, allowing for granular coding of pain locations and helping guide clinical decision-making [18,19]. By aligning these illustrations with standard terminologies, the data can be seamlessly incorporated into EHRs, clinical decision support systems, and large-scale research initiatives [20]. Open-source platforms have further gained traction in this domain, fostering community engagement, iterative improvement, and broad scalability for digital health tools [15,21]. Within pain assessment, open-source anatomically accurate illustrations facilitate customization for various patient populations and encourage continuous refinement of labeling accuracy and usability [6,12]. Over time, a robust, patient-centered ecosystem of clinically valid, standardized, and interoperable data for pain documentation can thus be developed [15,17].

To address existing limitations, we developed an anatomically accurate, sex-neutral human body vector illustration with digital labels specifically for back pain documentation. The illustration was created through several iterative design cycles by an interdisciplinary team. A user evaluation was conducted on a near-final version, and the feedback informed refinements that led to the final version now being released. The labels are pre-mapped to SNOMED CT codes to support standardized documentation, though other coding systems could also be applied. By releasing this illustration under the CC-BY 4.0 license, we aim to encourage broad adoption and community-driven enhancements. We also present findings from the user evaluation, which assessed the illustration's perceived usefulness, aesthetic appeal, and potential to support patient–clinician communication. Feedback will continue to guide future iterations and inform the development of digital tools for back pain documentation, for which the illustration can serve as a foundational component.

Methods

Development of the Anatomically Labeled Vector Illustration

Collaborative Design and Development Process

The anatomically labeled vector illustration was developed through a tightly integrated, interdisciplinary effort involving illustrators, computer scientists, physicians (from anatomy, orthopedics, radiology, and integrative medicine), and psychologists. This collaboration ensured that the final illustration met both clinical requirements and usability standards. Serving as the primary interface for mapping patient-reported pain locations, the illustration had to balance anatomical precision with clarity and inclusivity.

Before the design work began, the team collectively defined core criteria to guide development:

1. *Neutral Representation* – A generalized, non-demographic-specific body outline to ensure accessibility across diverse patient groups.
2. *Anatomical Accuracy* – Detailed but approachable visuals to support orientation and reliable self-reporting by patients, including all relevant structures without oversimplification.
3. *Interoperability* – Independently vectorized and hierarchically structured anatomical components (e.g., limbs to phalanges), incorporating clinical landmarks like vertebra C7 to support integration with medical systems.
4. *Versatility* – Design adaptable for various clinical, research, or corporate software environments, including customizable layers and labeling schemes.

To ensure anatomical correctness throughout, an anatomist continuously reviewed intermediate designs. The illustration originated from manual tracing of standard anatomical references [22–25], aligned in front and back views using Adobe Illustrator. Components such as bones, soft tissue, and clinical landmarks were separated into dedicated layers, enabling modular refinement and review.

Iterative Review Process

To ensure anatomical accuracy and clinical applicability, the design process followed a structured, iterative review cycle. Each iteration began with a comprehensive evaluation of the illustration by the interdisciplinary team, including an anatomist who scrutinized the bone and soft tissue outlines against standard anatomical references. Their expertise ensured that proportions, spinal curvature, and skeletal alignments were anatomically accurate and clinically consistent. Feedback from these reviews was then systematically analyzed and integrated into the next version.

First Review Cycle: The initial review focused on structural alignment and proportions. A misalignment in the vertebrae between the front and back views was identified, caused by perspective effects in the reference images. This issue was corrected in the second iteration by aligning vertebrae across views and refining proportions, including adjustments to the height of the pelvis, ankles, axillae, and other key regions. Soft tissue details were also enhanced to aid orientation and improve distinction between the front and back views, incorporating features like the costal arch, inguinal fold, scapular protrusions, elbows, knees, wrists, and finer details like skin folds and nails.

Second Review Cycle: Subsequent refinements addressed consistency and visual clarity. The clinical landmarks were matched to the final positions of the skeletal features, and the vertebrae were redrawn to improve proportionality. Additional visual elements, such as shading and subtle color cues, were introduced to preview the use case of the illustration and improve clarity in distinguishing anatomical structures. The silhouette of the body was further refined to ensure a cleaner and more accurate representation.

Third Review Cycle: In the pre-final review, a need for better spatial distinction between anterior and posterior structures was identified. This issue was particularly pronounced in the thorax, where the three-dimensional structure made it challenging to differentiate between the anterior and posterior aspects of the ribs. To resolve this, the posterior sections of the ribs and select bones were dimmed, improving spatial clarity and overall distinction.

Fourth Review Cycle and Standardization: In the final iteration, the components of the illustration were systematically named according to scientific nomenclature, ensuring compatibility with medical coding systems such as SNOMED CT (see section *Labeling Approach and SNOMED CT Mapping*). The vector elements were hierarchically grouped and organized into layers within the SVG file to facilitate standardized documentation and seamless integration with electronic health record systems (EHRs). The finalized illustration underwent thorough checks to confirm alignment with the initial design criteria and interoperability goals.

Final Revisions Based on User Feedback

In addition to the iterative reviews conducted by the interdisciplinary team, we incorporated insights from our user study to address key aesthetic concerns (Figure 1). The main changes included removing the prominently drawn nipples, redesigning facial features to reduce an “uncanny” appearance, and adjusting contrast/color palettes to improve visual clarity. We also refined minor aspects of body proportions in response to participant feedback on overall aesthetics.

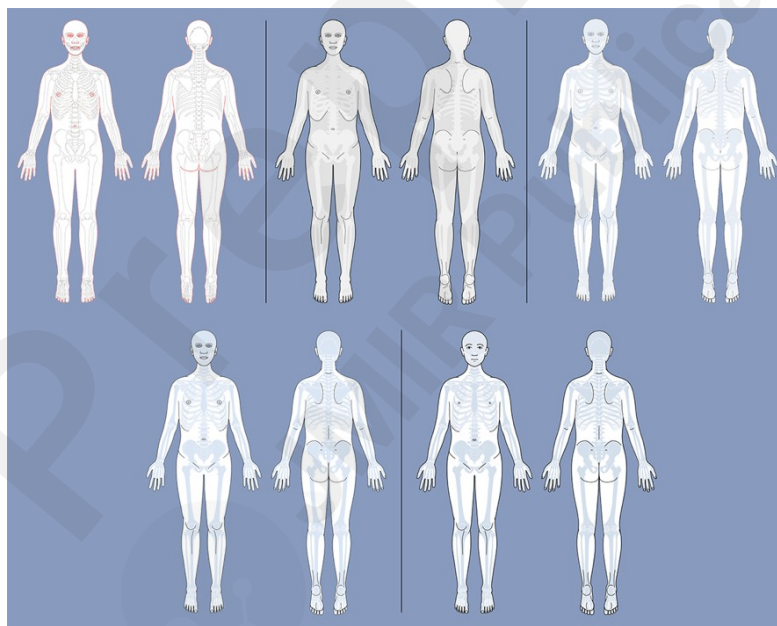


Figure 1. Design evolution of the anatomical vector illustration across five iterations. Top row (left to right): First three iterations showing progression from the initial prototype with detailed facial features and high-contrast outlines, through adjustments to skeletal proportions, shading, and anatomical accuracy. Bottom row (left to right): Fourth iteration used in the user study, followed by the final version featuring improved spatial clarity between anterior and posterior views, neutral aesthetics, and refinements for enhanced clinical applicability. These refinements were informed by structured expert reviews and user feedback from the evaluation study.

Internal Vector Structure and Layering

The vector illustration is structured in a clear, hierarchical way to facilitate easy manipulation and identification of body regions for pain drawing applications. At the highest level, the illustration is divided into main groups representing anatomical views—anterior (“bones-ant”) and posterior (“bones-pos”). Each view contains subgroups for distinct anatomical regions, such as “columna” (spinal column), “cranium,” “coxa” (hip region), and “superius” (upper extremities). Within each

region, individual bones or vertebrae are defined as separate, clearly labeled elements within the SVG file (e.g., “bones-pos-columna-C01” for cervical vertebra C01). This organized layering allows users or software developers to quickly access and highlight specific anatomical structures programmatically, greatly enhancing usability and interoperability in digital health applications.

Labeling Approach and SNOMED CT Mapping

The labeling of anatomical structures in the SVG illustration follows a systematic and standardized naming convention, ensuring clear identification and consistent referencing across applications. Each SVG element has a unique identifier directly corresponding to a specific anatomical structure. To further facilitate semantic interoperability, we mapped these identifiers to standardized clinical terminology codes from SNOMED CT. This mapping is provided in a structured JSON file, where each SVG element ID (e.g., "bones-pos-clavicula-sin") is directly associated with its corresponding SNOMED CT concept identifier (e.g., 720617006). This structured mapping simplifies integration with electronic health records and clinical documentation systems, enabling precise and unambiguous representation of anatomical locations in digital health and clinical informatics applications.

Open-Source Release

The final vector illustration is released under a CC BY 4.0 [26] license in the GitHub repository *Open Pain Illustration* [27]. Open-source availability encourages community engagement for further refinement and widespread adoption.

User Study

Study Objectives

The user study was conducted with four primary objectives. First, it sought to assess user confidence in utilizing the illustration to accurately represent their back pain. Second, it aimed to evaluate the perceived usefulness of the illustration in facilitating communication about back pain with healthcare professionals. Third, the study examined the aesthetic appeal of the illustration. Lastly, it gathered actionable suggestions to improve the illustration’s usefulness and visual design.

Methods

Participants

Participants were recruited via Prolific [28], using Prolific’s representative sampling functionality, which ensures representativeness based on sex, age, and ethnicity according to the simplified UK Census demographics [29]. Inclusion criteria included adults aged 18 years and older, regardless of their history of back pain. All participants provided informed consent before beginning the study. The recruitment goal was 300 participants to ensure a sample size large enough to provide robust descriptive statistics and meaningful insights into population characteristics. Two participants were excluded due to technical issues, and re-recruitment was deemed unnecessary as the final sample of 298 participants remained representative of the target population. Participants received £0.75 for completing the study.

Procedure

Participants were shown the developed anatomical vector illustration from the fourth review cycle (see Figure 1) and instructed to consider how they would use it to indicate areas of back pain. Those with current back pain were asked to reflect on how they would depict their actual pain, while those without back pain were instructed to imagine having back pain and how they would illustrate it. This task was conceptual rather than interactive, participants did not draw directly on the illustration. Following this, all participants completed an online survey designed to evaluate their confidence in depicting and communicating pain, as well as their perceptions of the chart’s aesthetics. The survey

also included open-ended questions to gather qualitative feedback.

Survey Measures

The survey included both closed-ended and open-ended questions. Closed-ended questions were rated on a 7-point Likert scale, while open-ended responses allowed participants to provide detailed feedback. The survey assessed confidence in accurately representing back pain using the anatomical vector illustration (referred to as the “body chart” in the survey), confidence in using the illustration to communicate pain to healthcare professionals, and the aesthetic appeal of the illustration. Open-ended responses captured suggestions for improving its usefulness and aesthetics. Additionally, demographic information, including age, gender, and back pain history, was collected. A full version of the survey is provided in the appendix (Multimedia Appendix 1).

Data Analysis

Quantitative data were analyzed using descriptive statistics, while qualitative feedback on aesthetics and the ability to draw pain was examined through thematic analysis facilitated by the OpenAI *o1-preview* language model [30]. Participants’ open-ended responses were analyzed thematically to uncover key patterns, recurring themes, and actionable suggestions. Due to the large volume of textual data, the language model was employed to assist in organizing and summarizing the feedback. Two separate prompts were designed for the analysis of each open-ended question (see Multimedia Appendix 2), enabling the model to generate structured outputs, including recurring themes, the number of participants mentioning each theme, representative quotes, and participant identifiers for manual review. To ensure the validity of the AI-generated results, the participant identifiers were manually reviewed by one of the authors, confirming that the themes accurately reflected the responses, with no mismatches identified.

Results

Participant Demographics

A total of 298 participants were included in the analysis. The mean age of the sample was 46.2 years (SD = 15.4). Of the participants, 154 (51.7%) were female, and 144 (48.3%) were male. Regarding back pain history, 154 participants (51.7%) reported experiencing current back pain, 94 (31.5%) had a history of back pain, and 50 (16.8%) reported no back pain.

Out of the dataset, 281 participants (94.3%) had matching assigned sex and gender identity, 2 participants (0.7%) were male but identified as women, none (0%) were female but identified as men, and 15 participants (5.0%) did not provide any gender description. The majority of participants, 154 (51.7%), reported having a bachelor’s degree or higher (bachelor’s: 96, master’s and above: 58). This was followed by 80 participants (26.8%) with upper secondary qualifications without university access, 31 participants (10.4%) with a university entry qualification, 21 participants (7.0%) with lower secondary qualifications, 10 participants (3.4%) with post-secondary education below a bachelor’s level, and 2 participants (0.7%) with no formal qualifications. Most participants identified as White (247; 82.9%), with smaller proportions identifying as Asian (22; 7.4%), Black (11; 3.7%), Other (5; 1.7%), Middle Eastern (4; 1.3%), or Latino (1; 0.3%). Additionally, 5 participants (1.7%) preferred not to answer, and a few selected multiple racial categories.

Confidence in Drawing Pain

Participants’ confidence in accurately illustrating their back pain on the body chart varied across the Likert scale, with 184 participants (61.7%) reporting a high level of confidence (scores > 5). A mean score of 5.7 out of 7 (SD = 1.2) was observed. Those currently experiencing back pain reported slightly greater confidence (mean = 5.8) than those without back pain (mean = 5.3). Notably, only 17

participants (5.7%) reported low confidence (scores < 4), highlighting a generally high comfort level with this task (see Figure 2).

Communication with Healthcare Professionals

A majority of participants felt confident that the body chart illustration would effectively aid communication with healthcare providers. Similar to the drawing confidence ratings, 179 participants (60.1%) expressed high confidence in this ability (scores > 5), with a mean score of 5.6 out of 7 (SD = 1.2). Only 17 respondents (5.7%) expressed doubts about the usefulness of the illustration in facilitating communication (scores < 4), as shown in Figure 2.

Aesthetic Appeal

The illustration's aesthetic appeal received mixed feedback: 131 participants (44.0%) rated it positively (>4), 83 (27.9%) rated it neutrally (=4), and 84 (28.2%) rated it negatively (<4). This variability resulted in a lower mean score of 4.3 out of 7 (SD = 1.5), indicating room for improvement in the visual design (Figure 2).

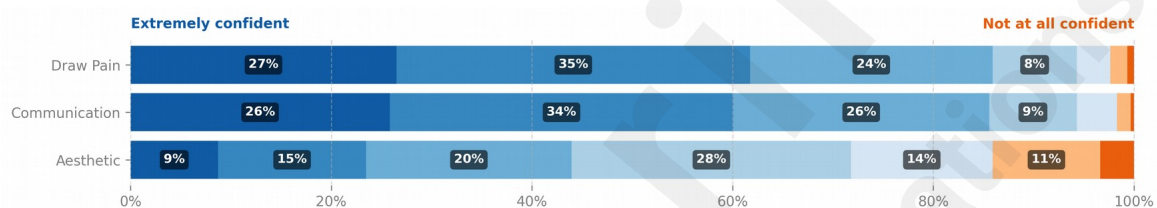


Figure 2. Stacked horizontal bar chart showing Likert-scale results for confidence levels across three categories: "Draw Pain," "Communication," and "Aesthetic." For "Draw Pain," 27% of participants are extremely confident, with subsequent decreases in confidence levels down to 8% not confident and 1% not at all confident. For "Communication," 26% are extremely confident, 34% very confident, and 9% not confident, with similar distribution across levels. For "Aesthetic," 9% are extremely confident, 15% very confident, with confidence levels tapering to 11% not confident and 1% not at all confident.

Summary of Feedback on Improvement Suggestions

Participants provided numerous suggestions to improve its functionality and visual appeal. Although the study only presented a static illustration without any interactive features or drawing tools, many participants proposed enhancements they would find useful in a fully functional version. Common suggestions for improving functionality included the ability to zoom or enlarge the image, add labels or anatomical landmarks, replace the skeletal view with muscular structures, and use color coding to indicate pain type or intensity. Some participants also expressed interest in additional perspectives such as side views and the ability to depict radiating or moving pain. Aesthetic feedback focused on modifying facial features, redesigning or removing nipples, adjusting body proportions, and optionally providing sex specific versions. These insights informed final refinements and will guide future iterations. A detailed breakdown is available in Multimedia Appendix 3.

Discussion

Principal Results

Our findings suggest that an anatomically accurate, open-source vector illustration for back pain documentation can help users identify and communicate pain regions, while also revealing areas that may benefit from further refinement. A substantial proportion of participants reported feeling comfortable using the illustration, indicating that the level of detail and clarity might be appropriate for many users. Notably, individuals currently experiencing back pain showed slightly higher confidence than those without it, pointing to the illustration's potential relevance for patients managing ongoing symptoms. However, user feedback underscored the need for future iterations to address varying needs, such as additional labeling options, alternative views, and aesthetic

adjustments.

Building on these insights, the qualitative feedback highlighted several opportunities to enhance both functionality and usefulness. Participants advocated for greater precision and flexibility, such as enlarging the image, enabling zoom, adding annotations, or including multiple viewpoints (e.g., side views) to capture pain that radiates or shifts. These suggestions align with broader literature emphasizing usability and adaptability as key drivers of patient engagement in digital health tools [6,15–17]. Calls for more nuanced and realistic representations, such as incorporating muscles, also reflect the evolving understanding of how anatomical accuracy can enhance the assessment and communication of musculoskeletal pain [5].

Aesthetically, participants revealed a tension between clinical neutrality and visual appeal. While some felt that aesthetics was secondary to the tool's medical purpose, others desired features that would humanize the figure—less unsettling facial features, optional sex-specific versions, realistic body proportions, and color enhancements. This variability underlines the importance of designing medical visualization tools that are both functionally rigorous and sensitive to users' comfort and emotional responses, a consideration increasingly recognized in medical illustration and patient-centered design research.

Older adults who commonly suffer from back pain may face challenges with digital interfaces due to reduced vision, motor skills, or digital literacy. However, prior studies have shown that with appropriate design, such as high contrast, large clickable areas, and intuitive interfaces, older patients can reliably use digital pain mapping tools [12], especially when interfaces are designed with accessibility in mind [5]. In our study, the mean participant age was 46.2 years, and confidence in using the illustration remained high across age groups, suggesting that the visual clarity and anatomical structure of our tool may already support use by older populations. Nonetheless, usability testing specifically targeting older adults is warranted to ensure accessibility and confirm reliability in clinical contexts.

From a clinical informatics perspective, the integration of anatomical labels aligned with coding standards such as SNOMED CT represents a significant step toward interoperability. By ensuring that the illustrated regions can be mapped onto recognized clinical terminologies, we open avenues for integrating patient-generated pain data into electronic health records, large-scale research databases, and decision support systems. This interoperability can ultimately enrich the landscape of clinical data, supporting more consistent documentation, outcome tracking, and evidence-based decision-making in back pain management [13,14,20].

Limitations and Future Directions

Notwithstanding these strengths, our study has limitations. Although we recruited a relatively large sample (N=298) with diverse backgrounds, online crowdsourced participants may not fully represent clinical populations or individuals with severe mobility impairments, non-English speakers, or patients in specific healthcare contexts. Additionally, our evaluation relied primarily on self-reported measures of confidence and perceived usefulness rather than longitudinal assessments or clinical outcomes. Future research could involve clinical trials that track how using such illustrations influences communication in consultations, diagnostic accuracy, treatment adherence, or patient satisfaction over time. Furthermore, the user study included additional questions that will be explored in a future publication.

Another important limitation is that the current illustration includes only anterior and posterior views. While some participants expressed interest in having additional perspectives, particularly

lateral/side views, to capture certain types of radiating or localized back pain, we have no immediate plans to add such views at this stage. Future community-driven adaptations or subsequent versions of the illustration could address this need by expanding the anatomical perspectives, but this remains outside the current scope of development. Consequently, clinicians and researchers should be aware of potential gaps in capturing pain that extends or radiates laterally.

While participants' high self-reported confidence suggests promise for the current illustration, it does not guarantee objective accuracy or confirm improved clinical decision-making. We acknowledge that future investigations must move beyond self-reports to assess whether patients' markings on our illustration consistently match clinical findings or imaging results. To that end, we are currently developing a dedicated digital tool that incorporates this body illustration and can be used on various devices (e.g., personal smartphones, clinic-based tablets). This tool will allow patients to interactively mark their pain regions in real time and submit those markings securely to their healthcare providers. By leveraging the SNOMED CT codes embedded within each body region, we intend to integrate these patient-drawn pain diagrams into electronic health record (EHR) systems. Such direct linkage will enable clinicians to compare reported pain locations and severities against diagnostic imaging or clinical assessments, offering a more robust evaluation of the tool's accuracy than subjective confidence ratings alone.

Evaluating the long-term and real-world impact of the illustration likewise remains a vital next step. Our future studies will embed the digital pain-reporting tool seamlessly into clinical workflows, capitalizing on standard health data exchange protocols to transmit pain diagrams to the appropriate providers at the point of care. For example, patients in a pilot clinic setting may draw their pain areas at home or during triage, with these data flowing directly into the clinic's electronic system (via FHIR- or HL7v2-based messaging) to alert clinicians before the consultation. Such integration will allow for longitudinal tracking of how pain evolves over time, comparisons with clinical outcomes (e.g., functional scores, medication use), and formal assessment of whether digital body mapping leads to better-targeted interventions. By capturing these objective metrics in routine practice and pairing them with patient-reported data, we can more definitively establish whether our anatomically accurate, open-source illustration and its future associated digital application foster improvements in back-pain care.

Conclusions

The anatomically accurate, open-source vector illustration for back pain documentation represents a valuable foundation for future digital health tools. It shows promise in improving patient confidence, enhancing communication with clinicians, and supporting integration into electronic health records through alignment with coding standards like SNOMED CT. While the current illustration effectively fulfills its purpose, user feedback highlights opportunities for refinement, such as adding muscular details, optional sex-specific versions, and features like zooming, annotations, and multiple perspectives. Moreover, future tools incorporating this illustration could further enhance usefulness by addressing functionality needs such as capturing radiating pain and offering customizable options. Iterative improvements to both the illustration and the tools that leverage it could promote broader adoption, improve standardization, and better meet diverse user needs. Future research should evaluate how the illustration and these tools impact clinical workflows and patient outcomes, ensuring their effectiveness in varied healthcare settings.

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(DIZH).

Authors' Contributions

YXL, SS, CJL, RS, SC, CMW, and PA conceptualized the project.

AH and LW created the anatomical illustration, with input from all authors; GC served as the lead authority on anatomical accuracy.

YXL and SS conceptualized and conducted the user study and performed the data analysis.

YXL and DB conducted the integration of SNOMED CT codes and technical interoperability.

YXL managed the project and drafted the manuscript.

PA and CMW acquired the funding.

All authors contributed to reviewing and editing the final version.

Conflicts of Interest

None declared.

Abbreviations

EHR: Electronic Health Record

SVG: Scalable Vector Graphics

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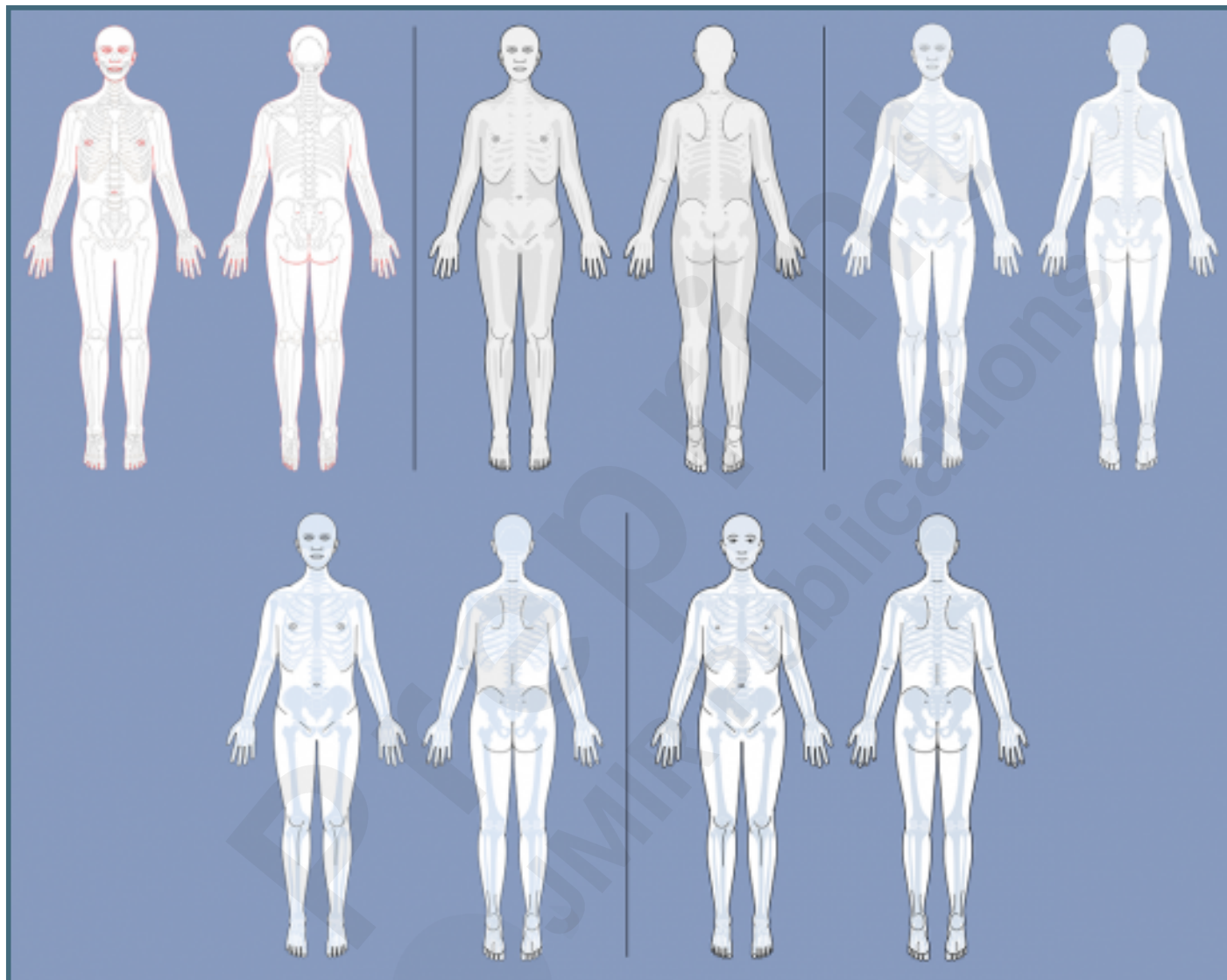
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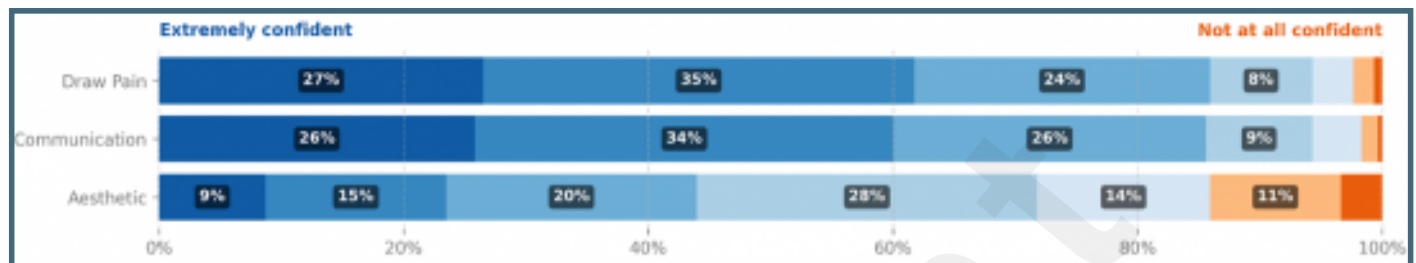
Supplementary Files

Figures

Design evolution of the anatomical vector illustration across five iterations. Top row (left to right): First three iterations showing progression from the initial prototype with detailed facial features and high-contrast outlines, through adjustments to skeletal proportions, shading, and anatomical accuracy. Bottom row (left to right): Fourth iteration used in the user study, followed by the final version featuring improved spatial clarity between anterior and posterior views, neutral aesthetics, and refinements for enhanced clinical applicability. These refinements were informed by structured expert reviews and user feedback from the evaluation study.



Stacked horizontal bar chart showing Likert-scale results for confidence levels across three categories: "Draw Pain," "Communication," and "Aesthetic." For "Draw Pain," 27% of participants are extremely confident, with subsequent decreases in confidence levels down to 8% not confident and 1% not at all confident. For "Communication," 26% are extremely confident, 34% very confident, and 9% not confident, with similar distribution across levels. For "Aesthetic," 9% are extremely confident, 15% very confident, with confidence levels tapering to 11% not confident and 1% not at all confident.



Multimedia Appendixes

Survey questions used in the user study.

URL: <http://asset.jmir.pub/assets/78fc1b8e83f7ca27ecf7b6d772969207.pdf>

Prompt templates used for the thematic analysis of open-ended survey responses on pain drawing accuracy and aesthetic feedback.

URL: <http://asset.jmir.pub/assets/f9f92f24bd7bc061c376b67cf7761ff8.pdf>

Detailed results from the thematic analysis of participant feedback, including identified themes, representative quotes, and participant counts.

URL: <http://asset.jmir.pub/assets/d884a8837bba948669793a2e631ce98e.pdf>



TOC/Feature image for homepages

Developed Illustration.

