

## Anatomical Study of Superficial Venous Patterns of the Upper Extremity in the Saudi Population

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### ABSTRACT

The precise anatomical identification of the superficial venous patterns (VPs) of the body plays a vital role in venipunctures during emergencies. Therefore, this study aimed to define the most common VPs among Saudi population. These VPs can be used as a guideline for safe venipuncture, especially on areas commonly chosen for venipuncture: the cubital area and the dorsum of the hand. The VPs of the 200 adult participants, which comprised 110 (55%) males and 90 (45%) females, were studied between March and May 2025. The study was performed in good light and at room temperature by using an elastic tourniquet and a mobile phone camera. Three methods were adopted for the identification and detection of the accuracy and validity of VPs: prolonged tourniquet application on selected areas, tracing the courses and connections of veins, and using good light for capturing and photographing the veins. Six different VPs were observed on the dorsum of the hand and five on the cubital area. The most common VPs on the dorsum of the hand were A network-shaped (35.5% males & 31.1% females), followed by W-shaped (28.2% males & 28.9% females). The most common VPs in the cubital area were M-shaped (45.5% males & 43.3% females), followed by Y-shaped (22.7% males & 31.1% females). No statistically significant differences were observed between the VPs of the upper extremities and sex ( $P > 0.05$ ), while a statistically significant difference was found between the VPs and the right and left sides of the body, in both the dorsum of the hand and the cubital area ( $P < 0.05$ ). Various types of VPs were observed in Saudi population. Notably, knowledge of these variations is useful for safe venipunctures, especially in emergency circumstances, to reduce failed attempts and risk of complications. The results of this study highlight the importance of investigating differences in VPs in clinical practices.

**Keywords:** Anatomical study; Venous patterns; upper extremities.

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