SHORT REPORT

Estimation of stature from handprint dimensions – Positional variations in real crime scene situations

Kewal Krishan a,* , Tanuj Kanchan b , Magdy A. Kharoshah c

a Department of Anthropology, Panjab University, Chandigarh, India
b Department of Forensic Medicine and Toxicology, Kasturba Medical College, Mangalore (A Constituent College of Manipal University), India
c Forensic Medicine Center, Dammam, Kingdom of Saudi Arabia

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Abstract   Estimation of stature from handprints/palmprints recovered at the crime scene may help in the identification of the criminal/perpetrator. The present communication is an advisory on the recently published studies regarding stature estimation from different dimensions of handprints in various populations. We emphasize that at the crime scenes, the prints of the hands are usually found in a way that the fingers are apart from each other that may or may not be fully stretched or in any other working position of the hand; and rarely similar to the position described in studies as a non-stretched normal position with all the fingers joined with one another except for the thumb. The communication further stresses on the need for further studies on hand prints describing various positional variations pertaining to the practical forensic situations especially when the prints are taken in stretched/flexed/extended positions of the hand.

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1. Introduction and background

Fingerprints, handprints and footprints are usually encountered at the crime scenes which help in the identification of the criminal/perpetrator. For identification purposes, the comparison of the crime scene prints with those of the suspects is an essential part of forensic casework. However, in many such cases, the investigating officer seems helpless for the lack of data for comparison. In these cases, any clue regarding the biological profile of the criminal may aid the investigation in the identification process. The estimation of the biological profile of the criminals from the prints left at the crime scene may further narrow down the possible pool of suspects. The estimation of stature is an important parameter in establishing the biological profile of the deceased that may prove useful during investigation of crimes where impressions of some body parts such as hand and foot-prints are available for examination.

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number of studies are available on estimation of stature from
footprints and shoeprints as these are often recovered at the
crime scenes. On the other hand, the studies on handprints/
palmprints are scanty; which may be attributed to their flimsy
presence at the crime scene and thus, its limited utility in a
practical scenario. A study by Jain and Feng showed that
about 30% of the latent prints recovered from the crime scenes
are from palms. Hence, there is a need for establishing forensic
standards and databases in different populations for estima-
tion of stature and sex from handprints/palmprints.

2. A short review of studies related to estimation of stature from
handprints

A search on the PUBMED revealed three recent studies on the
estimation of stature from dimensions of handprints/palm-
prints published in Forensic Science International, Journal of
Forensic Sciences and Journal of Forensic and Legal Medicine.
Ahemad and Purkait devised a new methodology for estima-
tion of stature from hand impressions after conducting a study
on 503 males of central India. They discussed some method-
ological issues related to the depressed area between the
hypothenar and thenar regions of the hand impressions and
bracelet crease. Ishak et al. established stature estimation
from dimensions of hand and handprints in 91 male and 110
female adult individuals of Western Australian population.
They found an accuracy of ± 4.74 to 6.53 cm in stature estima-
tion from hand and handprints. The third study is a recent one
conducted by Paulis who took measurements on hand prints
of 100 males and 91 females of an Egyptian population. He
devised linear and multiple regression equations from various
measurements of the handprints and established stature esti-
ination standards for Egyptian population. Ahemad and
Purkait used a simple manual method of taking handprints
after application of ink on the hands, however, Ishak et al. and
Paulis used a software program for scanning the hand
and processing the image for taking various measurements
instead of manual measuring techniques.

3. Real crime scene situations

At the crime scene, the hand/palmprints may be available in
the form of latent prints (prints which are not visible to the
naked eye, however can be developed by applying some pow-
ders and chemicals) or in the form of inked impressions left by
the criminals and burglars. In these circumstances, the prints
of the hands are usually found in a way that the fingers are
apart from each other that may or may not be fully stretched
as have been taken by Ahmed and Purkait (Fig. 1) or in any
other position such as opening the lock of the almirah/refriger-
ator or holding a stick while assaulting/attacking somebody
when the hand’s position can be described as bent, arched,
loosened or any other working position of the hand (Fig. 2).
However, the handprints may rarely be similar to the position
as shown by Paulis and Ishak et al. in their studies as a non-
stretched normal position with all the fingers joined with one
another except for the thumb (Fig. 3). The prints described
in their research may be obtained in rare circumstances when
the criminals touch a table, refrigerator or other flat objects
precisely and exactly in the same position. In most cases the
prints at the crime scene are available in the latent form.
Instances of such hand prints are presented in the real forensic
cases. In these situations, it is very difficult to take the mea-
surements on the hand prints and consequently, the estimate of
stature becomes problematic.
The communication is an advisory on the recently published studies regarding stature estimation from different dimensions of handprints in various populations. It further emphasizes on the need for more elaborate studies on hand prints describing various positional variations pertaining to the practical and real forensic situations especially when the prints are taken in stretched/flexed/extended position of the hand.

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Conflict of interest

The authors declare that there is no conflict of interest regarding this manuscript.