

**ANTHROPOLOGO-ODONTOLOGICAL AND DERMATOGLYPHIC
CHARACTERIZATION OF THE CONTEMPORARY BULGARIAN
POPULATION**

UDK 572.524+616.314(497.2)

Tsvetan Minkov, Velislav Tododrov, Rumiana Vladimirova

ABSTRACT

Palm and finger prints of 120 men and 120 women from the region of Kozlodui were studied. Two groups with total number of 240 individuals of both sexes or 480 dermatoglyphical prints were investigated, according to a complex of dermatoglyphical traits. The diagnostic analysis of the dermatoglyphic data was done according to Cummins and Midlo's method.

In order to be established significant or insignificant differences between the studied group, the received data were treated by the method of t – criterium according to formule of Weber (1961).

It was established a bimanual asymmetry in the studied population according to some dermatoglyphic traits in both sexes.

It was found out a sexual dimorphism by some traits as well like III interdigital pads and AIT.

On the basis of race – diagnostic analysis done a conclusion, that the explored population has european characteristic with a weak “eastern” admixture.

Odontological traits of 100 persons of both sexes of the region of Kozlodui were studied.

It was established, that the investigated group, as a whole, belong to the Western odontological stem.

According to some of the odontological traits, however like shovel – shaped upper medial incisors and crowding, it is observed increased frequency of the trait out of the limits of the Western odontological stem, which is an indication for a weak “eastern” tendency.

MATERIAL AND METHODS

It were studied the palm and fingers prints of 120 men and 120 women from the Kozloduy region. It have been investigated 240 individuals of both sexes as a whole. It were studied a big number dermatoglyphic features with diagnostical and taxonomic value on 3000 fingers and 480 palms prints. The processing and the analysis of the obtained data were done by the method of Cummins and Midlo (1961).

The obtained data were processed mathematic-statistic by the method t-criterion according to the formule of Weber (1961).

Besides, it were studied different odontological traits with taxonomical and diagnostical meaning on 100 individuals of both sexes. The odontological investigations were carried out on the pupils from 12 to 16 years old because in them the teeth are stipe well preserved from rubbing and the basic odontological features are well presented as a whole. The processing and the entire investigation of the odontological material is made according to Zoubov's method (1968).

RESULTS AND DISCUSSION

The distribution of the fingers figures on the right and left hands in both sexes is presented on table 1.

Table 1. Finger pattern frequencies and index in the populations from Kozlodui

Traits	men			women		
	left	right	average	left	right	average
A+T	4.66	3.16	3.91	4.66	3.56	4.11
R	4.00	4.83	4.41	4.50	4.49	4.50
U	52.99	46.83	49.91	58.50	58.16	58.33
L=R+U	56.99	51.66	54.32	63.00	62.65	62.82
W	38.50	45.16	41.83	32.33	33.66	32.99
DL ₁₀	6.70	7.10	13.80	6.38	6.50	12.88
W/Lx100	67.55	87.41	77.48	51.32	53.72	52.52
A/Lx100	8.17	6.12	7.14	7.40	5.68	6.54
A/Wx100	12.10	6.99	9.54	14.41	10.57	12.49

From the table 1 is seen that the loops are the most frequent figures in men and women. We have to notice that in women the loops meet more frequently than in men. Besides, the ulnar loops are more frequently in comparison with the radial ones in both sexes.

The frequency of the whorls is higher in men, than in women. The delta index is a little higher in men, in comparison with that one in women.

Main palm lines. The frequency of finishing of the main palm lines and their basic types are given on table 2. Type 5 of line A meets more frequently in women than in men in the explored population from type 9 and type 11 of line D is known by higher concentration in women, than in men. The some picture is seen with respect to the palm figures on the Hy.

Table 2. Types of main palm lines A, B, C, D and index of Cummins in the Kozlodui, %.

Traits	men			women		
	left	right	average	left	right	average
line A						
1 (+2)	7.5	5	6.75	3.33	3.33	3.33
3 (+4)	53.33	37.49	45.41	44.99	31.66	38.33
5' (+5''+6+7)	39.16	57.5	48.33	51.66	65	58.33
line D						
7 (+8+x+0)	11.66	6.66	9.16	22.49	15	18.75
9 (+10)	51.66	31.66	41.66	39.16	35.82	37.5
11(+12+13)	36.66	61.66	49.16	38.33	49.16	43.75
Index of Cummins	10.19	11.3	10.75	10.34	11.1	10.72
line C						
(4+5'+5''+6+7)	35.83	19.99	27.91	35.83	27.5	31.66
(9+10+11+12+13)	20.83	52.49	36.66	29.16	51.66	40.41
(8+x)	34.16	22.49	28.33	23.33	14.16	18.75
0	9.16	5	7.08	11.66	6.66	9.16
line B						
(6+7+8+9)	39.15	63.32	51.23	43.32	56.66	49.99
(3+4+5'+5'')	60	36.66	48.33	55.83	43.33	49.58
(0+x)	0.83	0	0.42	0.83	0	0.42

The additional triradii in the studied population from Kozlodui are with a higher concentration in men than in women. These triradii the most frequently meet on interdigital pad IV in both sexes.

From the axial triradii with the highest frequency distinguishes the carpal triradius-t in both sexes. In men, still, it meets more frequently than in women in the studied population. An absence of axial triradius meets in both sexes and in women it is more frequently than in men (table). A presence of two axial triradii simultaneously (tt', tt'') meets in both sexes, but in men this trait distinguishes with a higher concentration, than in women. This trait, (availability of two on the axial triradii simultaneously) is typical for the europoid populations, while in mongoloids it meets quite rarely (Gladkova, Ramazanov, 1977) (table 3).

Table 3. Palm patterns, accesorial and axial triradii in Kozlodui, %.

Traits	men			women		
	left	right	average	left	right	average
t	64.16	60.00	62.08	63.33	52.50	57.92
t'	22.50	19.16	20.83	28.33	23.33	25.83
t''	0.83	1.66	1.25	0.00	0.83	0.42
tt'	9.16	10.83	9.99	2.50	9.16	5.83
tt''	1.66	4.16	2.91	2.50	4.16	3.33
t't''	0.00	0.00	0.00	0.83	0.83	0.83
tt	0.00	0.00	0.00	0.00	0.00	0.00
t't'	0.00	0.00	0.00	0.00	0.00	0.00
tt't''	0.00	0.00	0.00	0.00	0.00	0.00
0	1.66	4.16	2.91	2.50	9.16	5.83
Palm patterns						
Hy	31.66	39.16	34.41	37.5	38.33	37.92
Th/I	10.83	6.66	8.75	15.83	6.66	11.25
II	3.33	7.50	5.41	2.5	3.33	2.92
III	7.5	40.0	23.75	15.83	37.5	26.66
IV	33.33	25.00	45.83	39.16	29.16	34.16
AIT	19.16	16.66	17.91	7.08	5.41	6.25

By means of t-criterium (Gladkova, 1966) it was established the degree of significance of the differences among the studied dermatoglyphic traits. It were compared dermatoglyphica traits - D₁₀, t, Hy, Th/I, II, III, IV interdigital pads and AIT (additional interdigital triradii) of left and right hands in men, of the left and right hands in women, of the left hands in men and women, and of right hands in men and women (table 4.).

At comparison of the data for left and right hand in men, it were established significant differences only about one of the investigated traits - III interdigital pad at P 0.001.

At comparison by means of t-criterium of the traits of left and right hand in women it was established that there are significant differences by two of the studied traits - Th/I at P 0.05 and III interdigital pad at P 0.001. At the other traits the differences are insignificant.

At comparison of the dermatoglyphic traits by means of t-criterion of the left hands of men and women, it were established significant differences by two traits as well - III interdigital pad at P 0.05 and additional interdigital triradii at P 0.05. At the rest dermatoglyphic traits the differences are insignificant.

Table 4. Comparison of the traits according to “t-criterion” in Kozlodui

Traits	Compared series			
	I u II	III u IV	I u III	II u IV
DL ₁₀	0.18	0.05	0.15	0.29
t	0.66	1.70	0.13	1.17
Hy	1.21	0.13	0.95	0.13
Th/I	1.15	2.25	1.14	0.00
II	1.43	0.38	0.38	1.43
III	5.93	3.80	2.01	0.40
IV	1.42	0.21	0.94	0.09
AIT	0.50	0.67	2.77	2.78

- I - men lefts hands
- II - men rights hands
- III - women lefts hands
- IV - women rights hands

At comparison of the dermatoglyphic traits of the right hand in men and women, a significant difference was established only by one of them - AIT at P 0.05. By the rest dermatoglyphic traits significant differences are not observed.

On the basis of the frequency of the studied dermatoglyphic traits in the explored population from the region of Kozlodui, was done a race-diagnostic analysis. From the obtained results was established that according to the concentration of the loops, whorls, arcs, delta index, radial type of line C, and the combination tt' and tt'', the studied population from the region of Kozlodui is in the borders of the of the europoid populations.

Only according to the trait tt'' the studied population distinguishes with too low concentration (0.83%) which is an indication for a weak presence of an “eastern” (mongoloid) admixture in the ethnogenesis of the investigated population.

Together with the dermatoglyphic traits, it were explored a big numbers odontological peculiarities in the structure of the teeth with a rase-diagnostic and taxonomic meaning.

The studied odontological traits in respect to their frequency and degrees of variation in the studied population from the region of Kozlodui are distributed in the next consistency (table 5).

Table 5. Frequency of the basic odontological features in Kozlodui.

	N	%	rad.
Diastem I ¹ -I ¹	100	9.00	0.61
Crowding	100	14.00	0.76
Shovel-shaped I ¹ -I ¹	100	26.00	1.07
Reduction of I ²	100	19.00	0.90
Forme of M ² (3&3+)	100	45.00	1.47
Carabelle's tubercul	100	51.00	1.58
P ₂ /3/	100	7.00	0.54
Σ ₄ M ₁	100	24.00	1.02
Σ ₄ M ₂	100	97.00	2.79
Distal crest of triginid	100	5.00	0.45
Deflecting wrinkle of metaconid	100	7.00	0.54
TAMI	100	3.00	0.35
Furrow 1 pa (3)	100	0.00	0.00
Furrow 1 pr (II)	100	9.50	0.63
Furrow 2 med (II)	100	34.00	1.25

Diastem.

This trait in the studied population shows comparatively high value, that is characteristic for the europoid populations.

Crowding.

This odontological features meets with a higher percentage frequency in the Eastern odontological stem and with a lower in the Western odontological stem. In the studied population from the region of Kozlodui its frequency is a little increased out of the limits of the Western odontological stem.

Shovel-shaped of the upper medial incisors.

This trait has a high taxonomic and race-diagnostic value, that meets with too higher frequency in Eastern odontological stem, than in Western. This trait is one of the most important odontological features with race-diagnostic and taxonomic meaning. With the most high frequency this trait meets in North american indians, eskimoses and mongoloids (Zoubov, Zolotareva, 1980). The summary frequency of the forms 2+3 of the shove-shaped upper medial incisors in the population from the region of Kozlodui is high and is out of the limits of the Western odontological stem (26%).

Reduction of upper lateral incisors.

The frequency of the reduction of the upper lateral incisors is comparatively low, but it has a wide degree of variation in the geographic localization and in the scale of the big races. With the biggest frequency distinguishes this trait in some populations from Central Africa, Pribaltic and Eastern Sibir. The investigated population from the region of Kozlodui distinguishes with a comparatively low concentration (3%).

Reduction of the hypoconus of second upper mollars.

The taxonomic value of this trait is not too high, because it has not aa direct connection with the big races. Characteristic of the europoid populations is that the concentration of this trait is rather high. In the explored population from theregion of

Kozlodui, the frequency of the reduction of the hypoconus of second upper molars (degree 3 and 3+) is with high value (45%).

Tuberculum Carabelli.

This trait is too important, for the race taxonomy with high taxonomic value, in distinction of both odontological stems. The trait distinguishes with an increased concentration in the populations of Western odontological stem.

It is important trait particularly in populations with closely related connections. In the studied population from Kozlodui it distinguishes with high concentration (51%), which is characteristic for populations from Western odontological stem.

Form of under molars.

The frequency of the sixtubercular first under molars is higher in the mongoloid groups and too lower in the europeoid ones. In the studied population from Kozlodui the sixtubercular forms of the under molars are with zero values.

Four tubercular forms of first under molars ($\Sigma 4M_1$).

This trait is with high taxonomic value. In europoid populations it distinguishes with high frequency. In the explored population from Kozlodui its frequency is comparatively high (24%).

Four tubercular forms of second under molars ($\Sigma 4M_2$).

This trait is with high concentration in the populations from Western odontological stem. In the studied population from Kozlodui its percentage frequency is 97%.

Distal crest of trigonid.

This odontological trait is characteristic for the populations from the Eastern odontological stem and has a high taxonomical value. Its percentage frequency in the investigated population from Kozlodui shows comparatively low value (5%), which is characteristic for the europoid populations.

Deflecting wrinkle of metaconid.

This trait is with a high taxonomic value, line a distal crest and is characteristic for the populations from the Eastern odontological stem. It distinguishes with high percentage frequency. In the population from Kozlodui its concentration is comparatively low (7%) which is characteristic for the europoid populations.

TAMI (*Tuberculum accessorium mediale internum*).

With high frequency are characteristic negroid from Eastern Africa and its low frequencies (under 10%) are typical for the population from Sibir, Middle Asia, Caucasus and Eastern Europe. In the explored population from Kozlodui of the noted trait is comparatively low (3%).

Furrow 1 pa (3).

This trait distinguishes with high taxonomic value. In mongoloid populations its frequency is too high (above 60%) while in europoid its is too low. In the studied population from Kozlodui this feature shows zero value.

Furrow 1 pr (II).

This trait is with an eastern characteristic, because is high values are in Eastern odontologica stem. In europoids it meets rarely or lack in all. In the studied population from Kozlodui this feature shows increased frequency, which is an indication for presence of “eastern” admixture in the ethnogenesis of this population.

Furrow 2 med (II).

This trait shows a high taxonomic value. Its frequency is higher in Western odontological stem. In the investigated population from Kozlodui its frequency is comparatively high (34%) which is characteristic for the europoid populations.

CONCLUSIONS

On the basis of the obtained data, was established that the investigate population from the region of Kozlodui according to the dermatoglyphic is in the limits of the europoid populations. According to some of the traits, however, like the frequency of the loops and axial triradii t', t'' and t't'' this population shows a weak “eastern” tendency out of the limits of the europoids.

It was established a statistically significant difference between left and right hand by two of the dermatoglyphic traits: dermatoglyphic representations of III interdigital pad meet more frequently on the right hand, than on the left hand in both sexes; and by the trait Th/I interdigital pad, the frequency of the dermatoglyphic representations is higher on the left hand, but only in women. It was established a sexual dimorphisme as well in this population by the next features: the dermatoglyphic representations on III interdigital pad meet more frequently in women than in men, but by the frequency of the trait AIT is observed the opposite relation the concentration is higher in men.

According to the more odontological traits, the explored population in the limits of Western odontological stem. By some of the traits, however, like shovel-shaped upper medial incisors (26%), crowding (14%) and 1 pr (II) (95%), the percentage frequency is too increased out of the limits of the Western odontological stem.

REFERENS

- Minkov, Ts., V. Dimitrova, S. Maximova, 2001. Anthropological characterization of Bulgarian population from the region of Strandja. According to dermatoglyphic data. Glasnik, t.36, 123 – 130.
- Minkov, Ts., N. Paraskova, 2002. Anthropologo-dermatoglyphical characterization of Bulgarian population from some regions of Western Thrace. Glasnik, t. 37, 263-269.
- Minkov, Ts., 1983. Anthropologo-odontological types of the contemporary people of Bulgaria-Garcia de Orta, Ser. Anthropol. 2 (1-2), 109-110.
- Гладкова Т.Д. 1966. Кожные узоры кисти и стопы обезьян и человека, Москва, Наука.
- Зубов А. А., 1968. Одонтология. Методика антропологических исследований, Москва, Наука.
- Зубов А. А., 1973. Этническая одонтология, Москва, Наука.
- Минков, Цв., 1977. Антрополого-одонтологична характеристика на съвременното население на България, ГСУ, кн. 1 – Зоология, 23-31.
- Минков, Цв., 1987. Антрополого-одонтологична характеристика на съвременното население в България. 1. Западна Тракия. ГСУ, Биологически факултет, 78, кн. 1-Зоология, 103-106.