JURNAL ILMU KESEHATAN VOL.8 NO. 1 JUNE 2020
E-ISSN : 2614-6703
Received :2019-11-11 Revised : 2019-11-28 Acceptance : 2020-12-19 Publish : 2020-06-05

VARIATION DIFFERENCES OF PHALANX DISTAL FINGER PRINT PATTERN ON KLEPTOMANIA PATIENS AND NON-PATIENTS IN POLICE RESORT JEMBER

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ABSTRACT

Phalanx distal pattern is a curve appeared and formed an unchangeable pattern unless it is caused by a severe trauma. Phalanx distal patterns are classified into 9, namely, Plain Arch, Tentarch, Ulnar loop, and Accidental. In order to find out suspect's identity, Indonesia Autometic Print Identification System (INAFIS) used 3 stages, which one of them is to determine pattern variation. Phalanx distal fingerprint on human can be utilized as to identify a person, whereas no one has resembled phalanx distal fingerprint even on twins. In this research, the researcher analyzed tendentious pattern variation of phalanx distal pattern on kleptomaniac in police resort office Jember. Generally, phalanx distal fingerprint pattern found on kleptomaniac tendentiously has unique pattern plain arch as the third most apparent pattern beside unlar loop and whorl, meanwhile it was found radial loop on non-patient as the third most apparent beside unlar loop and whorl which generally was phalanx distal fingerprint.

Keywords: phalanx distal, fingerprint, variation pattern, kleptomaniac.

INTRODUCTION

Phalanx distal is a sketch on palm of a hand. This sketch on skin surface is named dematoglyphic. Phalanx distal is a curve appeared and formed pattern. This pattern has formed since the person was still as a 14-week unborn infant. Terrible cases happening while pregnancy can affect the infants development because the placenta producing big informationmolecule like steroid and active peptide can help regulation and balance on mother physiology and infant. The alteration will affect infant development and growth significantly since placenta is the place to organize mother and infant physiology matters. Maternal autosomes delay in their duplication can lead to genetic imbalances that can affect the development of embryos in the form of organs. 17 abnormalities of neonates are usually smaller than normal autosomal neonates. Nearly in every disturbance in early pregnancy will result in dermatoglyphic patterns. In case of screening newborn babies, it can be done by emphasizing genetic matters such as genetic diseases, in order to detect early through phalanx distal[1].

Phalanx distal print is formed by the help of several genes functions, so phalanx distal print is unique to each individual. There are three variations of the general pattern of phalanx distal print, namely ulnar loop, arch and whorl (Field, 1976). In general, the average phalanx distal pattern of humans is around 65-70% is the ulnar loop, 25-30% is the whorl pattern and 5% is the arch pattern[2]. Phalanx distal prints in humans can be used as an identification tool, no individual has the same phalanx distal prints on even identical twins[3].

Some previous studiof phalanx distal stated that it was the latest identification tool. phalanx distal print in humans can be used as a tool to figure out a person's identity since no individual has the same fingerprint even on identical twins[3]. Fingerprints nowadays can also be used for various cases

such as attendance, security lock on electronic devices such as mobile phones, even used to replace house key, moreover the latest news confirms that fingerprints will now be developed into payment tool.Fingerprints, matter of factly, it can be used to ease human needs with the newest advances that continues to grow and progress.

To find the identity of the suspects, Indonesian Autometic Finger Print Identification System (INAFIS) uses 3 stages of phalanx distal fingerprint determination, namely determining pattern variations, secondly determining total ridge count, and the third is the determination of the gallton detail. Phalanx distal prints in humans can be used as a tool to identify a person because no individual has the same phalanx distal prints on even identical twins[3].

Phalanx distal prints can currentlybe used as a person's identification, so it does not rule out the possibility of phalanx distal prints can also be used to determine a person's desease through a variety of phalanx distal patterns. Some researches reportedphalanx distal prints as identification material in several genetic diseases. Previous research about phalanx distal patterns explained that the patterns often appear in patients with Thalassemia and nearly found in normal people, the result found the arch pattern of 3.8%, whorl 4.6%, ulnar loop 89.1%, radial loop 2.9%[4]. In schizophrenics, the frequency of the ulnar loop pattern is the highest frequent pattern, namely 61.1%, whorl 24.6%, radial loop 8%, and arch 6.3% [5]. Obese people have a pattern with 54.4% ulnar loop, 3.8% whorl, 1.6 arch (Chastanti 2009). In addition, in patients with ADHD (attention deficit hyperactivity disorder) have plain whorl pattern 34.5% more than normal children[6].

Kleptomania is an act of stealing things in which the action occurs due to impulse control disorder of the suspect. In kleptomania the stolen goods is not intentionally for financial objectives. It is due to the presence of brain disease and mental retardation. In some patients focal neurological signs, cortical atrophy and lateral ventricular enlargement are found. Kleptomaniacs have the urge to commit acts of stealing ridge count, and the third is the determination of the gallton detail. Phalanx distal print in humans can be used as a tool to identify a person because no individual has the same phalanx distal prints even identical twins[3].

Kleptomania is an act of stealing things in which the action occurs due to impulse control disorder of the suspect. In kleptomania the stolen goods is not intentionally for financial objectives. Biologically, it can be explained as the presence of brain disease and mental retardation. In some patients focal neurological signs are found, as well as cortical atrophy and lateral ventricular enlargement. Kleptomaniacs have the urge to repeat, and does not have control on objects rarely used by them. According to DSM IV-TR classifies kleptomania as impulse-Control Disorder Not Elsewhare Classified. This is initially started with impulses that cannot be rejected[7].

Kleptomania cannot be defined as an ordinary stealing activity because it does not relate witheconomic problems, usually kleptomania can even afford to buy goods that have been stolen or there is no financial purpose in carrying out their actions. In addition, the stolen objects are often discarded or even secretly returned or hidden. They are satisfied with stealing, either with or not guilty and regret or depression while doing it. On the other hand, normal stealing actions are planned and the stolen object has financial value. Legally if the criminal who caught stealing is proven legally to have kleptomaniaafter being examined by a competent psychiatrist or psychologist, then the person can be null and void according to article 44 paragraph 1: anyone who commits an act that he cannot be responsible for his action because of mental-illness cannot be convicted. Therefore, it is used as a database of pattern variations in the future so that it can facilitate the investigation process using initial scanning of the tendency of phalanx distal fingerprint patterns to sufferers of Kleptomania[8].

From previous studies showed that there was a relationship between the disease andphalanx distal prints. Thus, the research was expected to be able to analyze the tendency of variations in phalanx distal print patterns of patients who had Kleptomania in Jember Regency.

MATERIAL AND METHOD

Research on variations in phalanx distal print patterns in populations in Jember Regency was conducted with a cross sectional sample technique. Data collection was done by secondary ways that is the data obtained based on data collection procedures, namely Form Ak-23 from the patients of theft and Form AK-23 applicant police statement (SKCK) at Jember Police Resort. The method used in data collection was phalanx distal print observation method. Analysis was performed on the printed AK-23 form using the Chi-Square test, by looking at variations that often arise then described to make it readable.

In this research, samples were 68 people of each; both the theft and non-sufferers. Samples were taken at Jember Police Resort,Kartini Street. The mold taken was the AK-23 form both the right and left fingers listed in the Form AK-23 sample the last 10 years. The phalanx distal pattern will be given a certain code to make it easier for researcher tabulating the data. Several parameters of phalanx distal prints (variations of phalanx distal prints) were observed by 3 different observers and analyzed according to classification based on Galton (1895) then analyzed according to classification and recorded on the observation sheet. The selection of research subjects follows to the diagnostic criteria established by DSM IV-TR, namely patients aged over 20 years, criminal acts of theft are done repeatedly and objects taken have no economic significance**.**

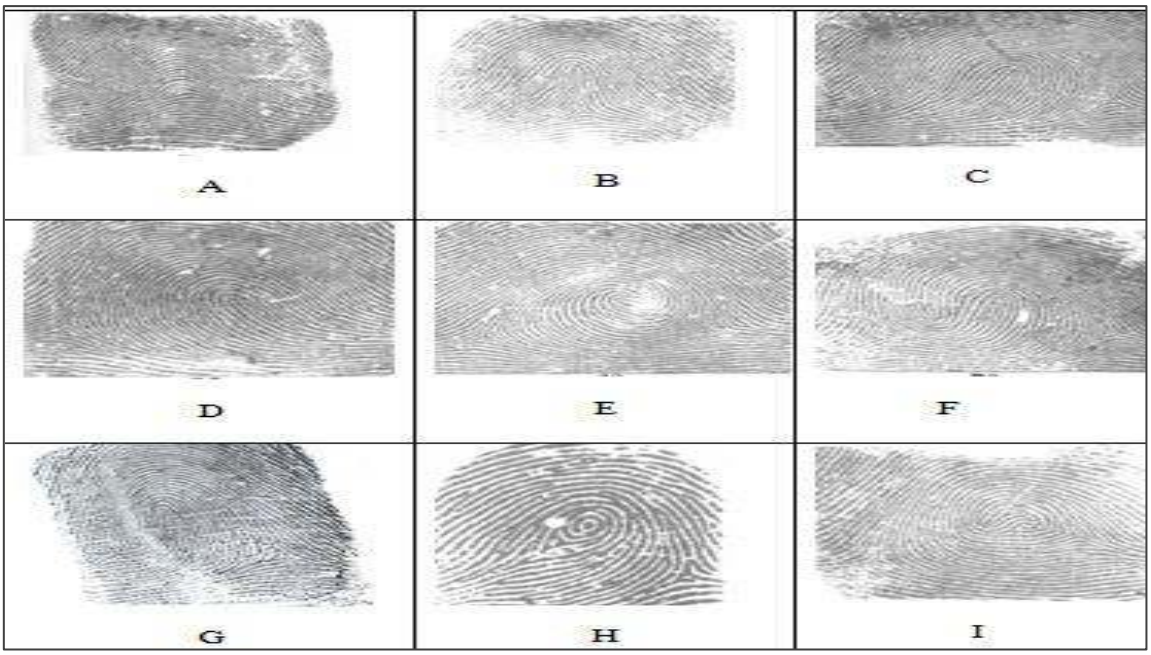


Figure 1 Classification of variations of phalanx distal prints a. Plain Arch, b. Tentarch, c. Ulnar loop, d. Radial loop, e.plain whorl, f. Twinted loop, g. lateral pocket loop, h. Central Pocket loop, i. Accidental. **Source:** Personal Data

Ridge Pattern in phalanx distal are classified into 9 patterns, namely Plain Arch, Tentarch, Ulnar loop, Radial loop, Plain whorl, Twinted loop, lateral Pocket loop, Central Pocket loop, Accidental, as it can be seen in Figure 1 that there are different shapes in each pattern. The pattern can be seen based on the direction of the flow (ridge), the center point (core), and T-junction (delta)[9].

In general, phalanx distal print patterns can be classified into a number of patterns, including the Arch Sate phalanx distal pattern with a curved pattern, Loop, the phalanx distal print with a circular pattern, and Whorl, the phalanx distal print pattern with a twisting pattern[5].

RESULTS AND DISCUSSION

Pattern variations of phalanx distal analysis in patients found that their left thumb had the highest frequency of ulnar loop patterns of 30 respondents, followed by a whorl poll of 20 respondents. 10 respondents had twinted loops variation. 3 respondents of each had variations in accidental, plain arch and Tentarch pattern. While the analysis of non-patient phalanx distal pattern was found in their right thumb had the highest variation in ulnar loop of 26 respondents. 13 respondents had variation in plain whorl pattern. 9 respondents had variation in twinted loop pattern. 5 respondents had variation in plain arch pattern. 4 respondents had variation in radial loop. The remaining 1 respondent was a tentarch pattern.

Table 1 : Variations in the pattern of distal phalanx prints of the left thumb in patients and non patiens

	Sufferer			Non- Sufferer		
	n	Frequency	Percentage	n	Frequency	Percentage
Accidental		3	4%			
Central pocket loop						
Lateral pocket loop						
Plain Arch	68	3	4%	68	5	7%
Plain Whorl		20	29%		13	19%
Radial loop					4	6%
Tented Arch		3	4%		1	1%
Twinted Loop		10	15%		9	13%
Ulnar loop		30	44%		26	38%

On the left index finger the patient had ulnar loop pattern of 30 respondents; 27 respondents had plain whorl variation; 9 respondents had radial loop pattern variation; 8 respondents had plain arch pattern variation; 4 respondents had tentacrh patterns variation; 3 respondents had variations, which were central pocket loop and twinted loop pattern. Only 1 respondent had variations in lateral pocket loop patterns. While non-patient left index had plain whorl pattern, 38 respondents and 21 respondents had variation of the ulnar loop pattern respectively; 9 respondents hadtwinted loops variation; 4 respondents had radial loop pattern variation; 2 respondents had tentarch variations and 1 respondent had accindental and central pocket loop patterns.

Table 2 : Variations in the pattern of distal phalanx prints of the left index finger in patients and non patiens

	Sufferer			Non-Sufferer		
	n	Frequency	Percentage	n	Frequency	Percentage
Accidental					1	1%
Central pocket loop		3	4%		1	1%
Lateral pocket loop		1	1%			
Plain Arch		8	12%			
Plain Whorl	68	27	40%	68	38	56%

Radial loop	9	13%	4	6%
Tented Arch	4	6%	2	3%
Twinted Loop	3	4%	9	13%
Ulnar loop	30	44%	21	31%

On the left middle finger the patient found that; 31 respondents had variation of ulnar loop patterns, 22 respondents had plain whorl patterns variations, 4 respondents had twinted loop pattern variations, 4 respondents had Twinted loop pattern variations, 2 respondents had plain arch pattern variations, 1 respondent had central pocket loop and tented arch pattern variations. While on 37 non-patients' left middle finger had ulnar patterns variation, 24 respondents had plain whorl pattern variation, 11 respondents had radial loop pattern variation, 4 respondents had lateral pocket loop and tentarch variations, 3 respondents each had central pocket loop and twinted loop patterns and only 1 respondent had accidental and plain arch patterns variation.

Table 3 : Variations in the pattern of distal phalanx prints of the left middle finger in patients and non patiens

	Sufferer			Non-Sufferer	
	n	Frequency	Percentage	N	Frequency	Percentage
Accidental					1	1%
Central pocket loop		1	1%		3	4%
Lateral pocket loop					4	6%
Plain Arch		2	3%		1	1%
Plain Whorl	68	22	32%	68	24	35%
Radial loop					11	16%
Tented Arch		1	1%		4	6%
Twinted Loop		4	6%		3	4%
Ulnar loop		31	46%		37	54%

Based on the analysis of the patient's left ring finger, it was found thatulnar loop pattern variation belonged to 35 respondents. 20 respondents had plain whorl pattern variation. 6 respondents had plain arch pattern variation. 4 respondents had twinted loop pattern variation, and only 1 percent had accidental pattern variation. The left ring finger of 35 non-patients had plain whorl patterns variation. 22 respondents had ulnar loop pattern variation. 5 respondents hadradial loop pattern. Each of 3 respondents had central pocket loop, lateral pocket loop, tentarch and twited loop, and 2 respondents had plain arch pattern variation.

Table 4 : Variations in the pattern of distal phalanx prints of the left ring finger in patients and non patiens

	Sufferer			Non-Sufferer	
	n	Frequency	Percentage	N	Frequency	Percentage
Accidental		1	1%			
Central pocket loop					3	4%
Lateral pocket loop					3	4%
Plain Arch		6	9%		2	3%
Plain Whorl	68	20	29%	68	35	51%
Radial loop					5	7%

Tented Arch				3	4%
Twinted Loop	4	6%		3	4%
Ulnar loop	35	51%		22	32%

On the left little finger of the respondents 41 ulnar loop patterns were found. 16 respondents had whorl patterns. 9 respondents had plain arch pattern variation. 4 respondents hadtwinted loop pattern variation. 2 variations of central pocket loop pattern. While the non-patient left little finger most variation pattern were plain whorl of16 respondents, unlar loop pattern of 8 respondents, central pocket loop of 7 respondents, radial loop and tentarch of 6 respondents of each. Each respondent has a variation of lateral pocket loop and twinted loop.

Table 5 : Variations in the pattern of distal phalanx prints of the left little finger in patients and non patiens

	Sufferer			Non-Sufferer	
	n	Frequency	Percentage	N	Frequency	Percentage
Accidental					
Central pocket loop		2	3%		7	10%
Lateral pocket loop					1	1%
Plain Arch		9	13%			
Plain Whorl	68	16	24%	68	16	24%
Radial loop					6	9%
Tented Arch					6	9%
Twinted Loop		4	6%		1	1%
Ulnar loop		41	60%		8	12%

In the right thumb as many as 31 respondents had ulnar loop pattern variation. 24 respondents had plain whorl pattern variation. 7 respondents had variations in twinted loop pattern and 5 respondents had plain arch pattern variation. In the patient's right thumb, there were 27 respondents who had a whorl pattern variation. 17 respondents had ulnar loop patternvariation. 11 respondents had variations in tentarch pattern variation. 13 respondents hadtwinted loops variation. 2 respondents had plain arch. 1 respondent had accidental patterns and central pocket loops.

Table 6 : Variations in the pattern of distal phalanx prints of the right thumb finger in patients and non patiens

	Sufferer			Non-Sufferer	
	n	Frequency	Percentage	N	Frequency	Percentage
Accidental					1	1%
Central pocket loop		1	1%		1	1%
Lateral pocket loop						
Plain Arch		5	7%		2	3%
Plain Whorl	68	24	35%	68	27	40%
Radial loop					11	16%
Tented Arch						
Twinted Loop		7	10%		13	19%
Ulnar loop		31	46%		17	25%

On the right index finger, 35 respondents had the ulnar loop pattern. 22 respondents hadplain whorl pattern variation. 6 respondents had variations in the radial loop. 4

respondents had central pocket loop pattern variation. 3 respondents had arch and twinted loop patterns variation of each.

In the right forefinger of non-patients, there were 38 respondents had whorl pattern. 15 respondents had ulnar loop pattern. 5 respondents of each had a variation in the radial loop and twinted loop patterns. 4 respondents had pattern of central pocket loop. 3 respondents of each had twinted loop and plain arch patterns. 1 respondent of each had a variety of accidental and lateral pocket loop patterns.

Table 7 : Variations in the pattern of distal phalanx prints of the right index finger in patients and non patiens

	Sufferer			Non-Sufferer		
	n	Frequency	Percentage	N	Frequency	Percentage
Accidental					1	1%
Central pocket loop		4	6%		4	6%
Lateral pocket loop		1	1%		1	1%
Plain Arch		3	4%		3	4%
Plain Whorl	68	22	32%	68	38	56%
Radial loop		6	9%		5	7%
Tented Arch		2	3%		5	7%
Twinted Loop		3	4%		3	4%
Ulnar loop		35	51%		15	22%

In the right middle finger, the most common pattern was ulnar loop with 42 respondents. 17 respondents had variations in whorl patterns. 3 respondents of each had plain arch and twinted loop patterns.

On the right middle finger of non-patients, 26 respondents had variety of ulnar loop patterns. 23 respondents had plain whorl pattern variation. 8 respondents had variations in the radial loop pattern. as many as 6 respondents have variations in the twinted loop pattern. 2 respondents had lateral pocket loop patterns. 1 respondent of each had a variation of plain arch and central pocket loop patterns.

Table 8 : Variations in the pattern of distal phalanx prints of the right middle finger in patients and non patiens

	Sufferer			Non-Sufferer		
	n	Frequency	Percentage	n	Frequency	Percentage
Accidental Central		1	1%			
pocket loop Lateral					3	4%
pocket loop Plain						
Arch	68	7	10%	68		
Plain Whorl		20	29%		41	60%
Radial loop					10	15%
Tented Arch					1	1%
Twinted Loop		2	3%		1	1%
Ulnar loop		29	43%		15	22%

On the right ring finger of 29 respondents were known to have ulnar loop patterns variation. 20 respondents had whorl patterns. 7 respondents had plain arch pattern and 2 respondents hadtwinted loop pattern variation.

In addition, on the right ring finger of 41 patients, the most apparent pattern was whorl. 15 respondents had ulnar loop pattern. 10 respondents had radial loop. 3 respondents had central pocket loop. 1 respondent of each had tentarch and twinted loop.

Table 9 : Variations in the pattern of distal phalanx prints of the right ring finger in patients and non patiens

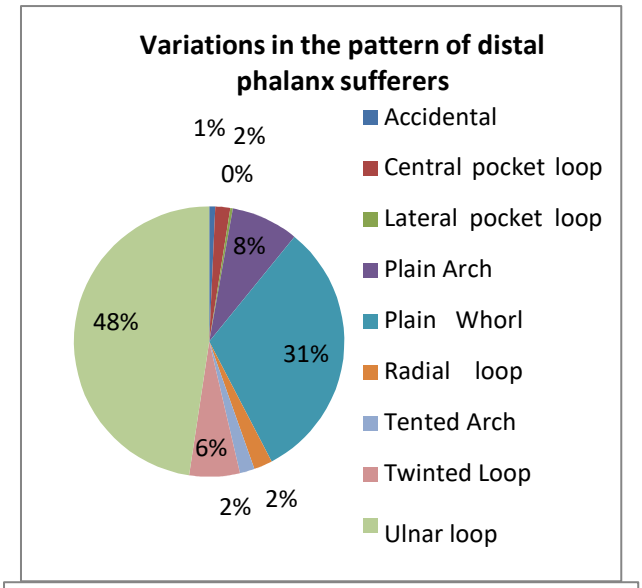
	Sufferer			Non-Sufferer		
	n	Frequency	Percentage	n	Frequency	Percentage
Accidental						
Central pocket loop		1	1%		1	1%
Lateral pocket loop					2	3%
Plain Arch		3	4%		1	1%
Plain Whorl	68	17	25%	68	23	34%
Radial loop					8	12%
Tented Arch						
Twinted Loop		3	4%		6	9%
Ulnar loop		42	62%		26	38%

On the right pinky finger, 26 respondents had whorl pattern variation. 20 respondents had ulnar loop pattern. 2 respondents hadtentarch patterns and only 1 respondent had twinted loop pattern.

While the right little finger had the most variation, each of 19 respondents had ulnar loop and whorl. 8 respondents had the radial loop pattern. 4 respondents had tentarch pattern. 1 respondent of each has a central pocket loop and twinted loop.

Table 10 : Variations in the pattern of distal phalanx prints of the right ring finger in patients and non patiens

	Sufferer			Non-Sufferer		
	n	Frequency	Percentage	n	Frequency	Percentage
Accidental					0	0%
Central pocket loop					1	1%
Lateral pocket loop					0	0%
Plain Arch		9	13%		0	0%
Plain Whorl	68	26	38%	68	19	28%
Radial loop					8	12%
Tented Arch		2	3%		4	6%
Twinted Loop		1	1%		1	1%
Ulnar loop		20	29%		19	28%



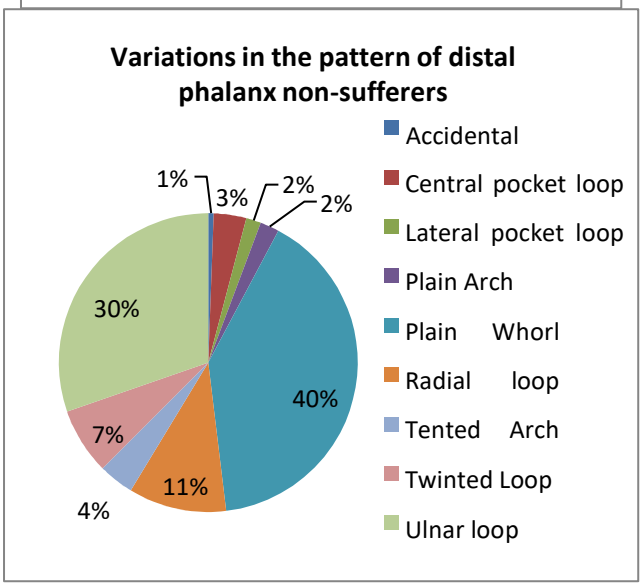


Figure 2 :Graph Variations in the pattern of distal phalanx sufferers **Figure 3** : Graph Variations in the pattern of distal phalanx non-sufferers

Based on the diagram above (Figure 2), it is obtained that themost tendentious variation of phalanx distal patterns in patients is ulnar loop pattern of 48%. The second pattern variation that often appears is plain whorl. The third pattern variation that often appears is plain arch. The fourth pattern variation is twinted loop. The fifth pattern variation that often appears is radial loop. The sixth variation pattern that often appears is the central pocket loop and the seventh variation that often appears is the accidental pattern.

Based on the phalanx distal pattern on non-patient, the most frequentoccurring variation was plain whorl as much as 40%. The second most common pattern was variation of ulnar loop pattern. The third most common pattern was radial loop, followed by twinted loop. The fifth most common wastentarch. The sixth variation was radial loop. The seventh most common patterns were the lateral pocket loop and plain arch. The last often appeared variation wastentarch.

From the results of the research, it indicates that ulnar loop, whorl, and arch had the highest frequency both in patients and non-patients. This is in accordance with the results of research by Field (1976) who stated that there was common patterns of phalanx distal prints, namely ulnar loop patterns, patterns whorl and arch patterns.

Based on phalanx distal prints observed in the present research, it can be found that the most frequent pattern in patients was the ulnar loop pattern, whereas in non-patients the most frequent pattern was the whorl pattern. This is in line with research Triwani (2010); Sintyaningtyas (2009); Chastanti (2009); Wati (2016) stated that differences of pattern variations often appeared in several diseases. This research also shows that variations in lateral pocket loop patterns were only found in non-patients, whereas in patients there was no such pattern. From the results of statistical tests, this research found differences in phalanx distal prints between kleptomania patients and non-patients with significant results.

CONCLUSION

The result of this research can be concluded that, in the phalanx distal prints of kleptomaniacs found the tendency of plain arch pattern as the third most apparent pattern that often appears in addition to ulnar loop and whorl pattern. Whereas in non-patients, a special tendency to radial loop pattern was found as a third most apparentbesides the ulnar loop and whorl pattern. This research is still far from perfection so that further researches are expected to use phalanx distal pattern as an initial scanning in several other diseases.

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