

Level of Knowledge and Perception Public of Forensic Odontology

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Abstract

Background: Awareness of the importance of forensic odontology and the need for national forensic odontology data collection is still lacking attention both in the community and at the government level. **Aim:** to determine the level of knowledge and public perceptions about forensic odontology. **Method:** This type of observational analytic study with cross sectional design with the population of Makassar City using snowball sampling technique. This research was conducted September 2020. This study has obtained ethics from the Health Research Ethics Committee of the Hasanuddin University Dental Hospital. This research tool was an online questionnaire. The knowledge domain consists of 10 questions and the perception domain consists of 10 questions. To assess knowledge, each indicator of knowledge is assessed using the Guttman scale. Total research sample is 213 respondent with the test equipment used chi-square and value p 0.05. **Results:** The average level of public knowledge was 6.15 ± 2.30 (moderate category), the perception level was 6.25 ± 2.13 (moderate category). **Conclusion:** The level of knowledge and perceptions about forensic odontology in Makassar City people aged ≥ 18 years is still around 60% who answered questions correctly and responded positively.

Keywords: Forensic odontology, Public knowledge, Public perception, National forensic odontology registry.

Introduction

In Indonesia, regulations regarding post mortem have been regulated in Law No. 36 of 2009 on health. Article 118 paragraph 1 of the Law states that every unidentified corpse must be identified.¹ In European and American countries, conducting national forensic odontology data collection is an obligation as a citizen.² In Indonesia, the awareness of the importance of forensic odontology and the need for national forensic odontology data collection is still lacking attention both at the community and at the government level.³

Forensic odontology is a specialist field in dentistry that helps resolve a number of criminal cases.⁴ Humans have their own unique characteristics regarding tooth structure (enamel / dentin), lip pattern, and palatal rugae.⁵ Age, sex, race, occupation, socioeconomic status, and dental history can be determined by a forensic

odontologist.⁶ Therefore, during criminal investigations, representatives of the court frequently consult with odontologists as part of the prosecution process, to protect living victims, and / or to identify corpses.⁷

Although the benefits of establishing a national forensic odontology data collection are significant, their feasibility depends on the level of people's willingness to contribute to their dental profile, because the criminal investigation system does not involve public participation in this kind of national data collection.⁸

Before attempting to undertake a national forensic odontology data collection, there is a need to evaluate public awareness of forensic odontology. Therefore, this study was conducted to examine public knowledge regarding the aspects of forensic odontology and public perceptions regarding forensic odontology. Given the fact that the promotion of forensic odontology and

forensic odontology data collection nationally has not yet been carried out.

Material and Method

This research was an observational analytic study with a cross sectional study design. This research was conducted on 15-20 October 2020 in the city of Makassar. This study has obtained ethics from the Health Research Ethics Committee of the Hasanuddin University Dental Hospital with Ethical Approval number No.0091 / PL.09 / KLPK FKG-RSGM UNHAS / 2020. The population of this research is the people of Makassar city. Determination of the sample using snowball sampling. The inclusion criteria in this study were Makassar city people aged ≥ 18 years, having a smartphone and social media (*whatsapp application*). Meanwhile, the exclusion criteria were people who did not complete the questionnaire completely. In this study, 213 samples were obtained.

The instrument used in this study was a questionnaire adapted from the research of Salam M, et al.⁸ Saudi Dental Journal which consisted of two domains. The knowledge domain consists of 10 questions and the perception domain consists of 10 questions.

To assess knowledge, each indicator of knowledge is assessed using the Guttman scale. Having 2 indicators for the answer “yes” is given a score of 1 while the answer “no” or “don’t know” is given a score of 0. To assess perception, each indicator of perception is assessed using the Guttman scale. Has 2 indicators of answers “agree” and “strongly agree” classified as positive responses and answers “strongly disagree”, “disagree”, and “neutral” are classified as negative responses. The total new scores were categorized into 3 categories, poor: 1 - 4.3, moderate 4.4 - 7.7, good 7.8 – 10.

Results

Table 1 Distribution of respondent characteristics

Characteristics	n (%)
Gender	
Male	71 (33.3%)
Female	142 (66.7%)
Age	
18-25	87 (40.8%)
26-35	47 (22.1%)
>36	79 (37.1%)
Marital Status	
Unmarried/Separated	109(51.2%)
Married	104(48.8%)
Education	
School	53(24.9%)
University	160(75.1%)
Job Status	
Work	135(63.4%)
Not working	78(36.6%)
Have Health Insurance	
Yes	180(84.5%)
No	33(15.5%)
Number of Clinical visits year	
Never	61(28.6%)
1-2 times	118(55.4%)
More than 2 times	34(16.0%)

Table 2 Responses to knowledge questions

	Yes n(%)	No n(%)
A1. Everyone has a different palate	151 (70.9%)	62 (29.1%)
A2. Each person has different dental characteristics	207 (97.2%)	6 (2.8%)
A3. Everyone has a different lip line	200 (93.9%)	13 (6.1%)
A4. Forensic dentistry can determine the sex of a person	77 (36.2%)	136 (63.8%)
A5. Forensic dentistry helps in estimating a person's age	121 (56.8%)	92 (43.2%)
A6. Forensic dentistry assists in medico-legal cases	143 (67.1%)	70 (32.9%)
A7. Forensic dentistry assists in sexual harassment investigations	53 (24.9%)	160 (75.1%)
A8. Forensic dentistry assists in the investigation of accident victims	125 (58.7%)	88 (41.3%)
A9. Forensic dentistry assists in the investigation of bite marks	156 (73.2%)	57 (26.8%)
A10. Forensic dentistry assists in investigations of sexual violence (domestic violence)	78 (36.6%)	135 (63.4%)

Table 3 Responses to perceptual statements

	Positive response n (%)	Negative response n (%)
B1. I think refusing to give out my dental information is for privacy	55 (25.8%)	158 (74.2%)
B2. I have the right to refuse the national dental registration.	59 (27.7%)	154 (72.3%)
B3. I have the right to collect my dental information from the national dental	162 (76.1%)	51 (23.9%)
B4. I believe forensic dentistry assisted in the identification of criminal	158 (74.2%)	55 (25.8%)
B5. I believe the national dental data collection can help in legal prosecution	130 (61.1%)	83 (38.9%)
B6. I believe forensic dentistry helps identify disaster victims	139 (65.2%)	74 (34.8%)
B7. I believe the dentist is competent in making my dental data	181 (85.0%)	32 (15.0%)
B8. I believe dentists are able to keep my dental information	187 (87.8%)	26 (12.2%)
B9. Dental information should be maintained and controlled by the government	129 (60.6%)	84 (39.4%)
B10. I want to provide dental information in the national dental data collection in the future	130 (61.0%)	83 (39.0%)

Table 4 Average responses to questions of knowledge and perceptions

	Mean	SD	Category
Knowledge	6.15	2.30	Moderate
Perception	6.25	2.13	Moderate

Category: Poor 1 - 4.3 , moderate: 4.4 - 7.7, good 7.8 – 10

Table 5 Chi-square test related to the relationship between knowledge level and respondent characteristics

Characteristic	Knowledge n (%)			p value
	Poor	Moderate	Good	
Gender Male Female	19 (26.8%) 35 (24.6%)	27 (38.0%) 63 (44.4%)	25 (35.2%) 44 (31.0%)	0.672
Age 18-25 26-35 >36	19 (21.8%) 17 (36.2%) 18 (22.8%)	39 (44.8%) 15 (31.9%) 36 (45.6%)	29 (33.3%) 15 (31.9%) 25 (31.6%)	0.358
Marital Status Unmarried/ separated Married	28 (25.7%) 26 (25.0%)	47 (43.1%) 43 (41.3%)	34 (31.2%) 35 (33.7%)	0.928
Education School University	22 (41.5%) 32 (20.0%)	22 (41.5%) 68 (42.5%)	9 (17.0%) 60 (37.5%)	0.002*
Job Status Work Not working	29 (21.5%) 25 (32.1%)	56 (41.5%) 34 (43.6%)	50 (37.0%) 19 (24.4%)	0.096
Have Health Insurance Yes No	42 (23.3%) 12 (36.4%)	77 (42.8%) 13 (39.4%)	61 (33.9%) 8 (24.2%)	0.254
Number of clinical visits year Never 1-2 times More than 2 times	19 (31.1%) 28 (23.7%) 7 (20.6%)	21 (34.4%) 57 (48.3%) 12 (35.3%)	21 (34.4%) 33 (28.0%) 15 (44.1%)	0.217

category: poor 1 - 4.3, moderate: 4.4 - 7.7, good 7.8 - 10, p * value: significant at <0.05.

Table 6 Chi-square test related to the relationship between the level of perception and the characteristics of respondents

Characteristics	Perception n (%)			p value
	Poor	Moderate	Good	
Gender				0.392
Male	12 (16.9%)	32 (45.1%)	27 (38.0%)	
Female	35 (24.6%)	62 (43.7%)	45 (31.7%)	
Age				0.629
18-25	20 (23.0%)	40 (46.0%)	27 (31.0%)	
26-35	13 (27.7%)	17 (36.2%)	17 (36.2%)	
>36	14 (17.7%)	37 (46.8%)	28 (35.4%)	
Marital status				0.48
Unmarried/ separated	24 (22.0%)	52 (47.7%)	33 (30.2%)	
Married	23 (22.1%)	42 (40.4%)	39 (37.5%)	
Education				0.004*
School	18 (34.0%)	26 (49.1%)	9 (17.0%)	
University	29 (18.1%)	68 (42.5%)	63 (39.4%)	
Job status				0.049*
Work	23 (17.0%)	61 (45.2%)	51 (37.8%)	
Not Working	24 (30.8%)	33 (42.3%)	21 (26.9%)	
Have Health Insurance				0.321
Yes	37 (20.6%)	79 (43.9%)	64 (35.6%)	
No	10 (30.3%)	15 (45.5%)	8 (24.2%)	
Number of clinical visits year				0.176
Never	15 (24.6%)	25 (41.0%)	21 (34.4%)	
1-2 times	30 (25.4%)	51 (43.2%)	37 (31.4%)	
More than 2 times	2 (5.9%)	18 (52.9%)	14 (41.2%)	

Category: poor 1 - 4.3, moderate: 4.4 - 7.7, good 7.8 - 10, p * value: significant at <0.05 .

Discussion

The Federation Dentaire Internationale (FDI) defines forensic odontology as the branch of dentistry that deals with the proper handling and examination of dental evidence and with the proper evaluation and

presentation of dental findings.⁹ Implementing national medical or dental data collection requires great effort at the government level.⁴ National forensic odontology data collection requires the establishment of a security infrastructure for data services, training of dentists nationwide, suitable tools for obtaining prints, and a

competent data analysis team.¹⁰

Table 2 shows the responses to the knowledge questions. In this survey, the majority of respondents knew that the palatine rugae pattern, teeth and lip lines were different for each individual. This contrary to research conducted in Saudi Arabia, the majority of respondents did not know that the palatine rugae and tooth characteristics were different for each individual.⁸ In the survey it was found that the majority of respondents knew that forensic odontology helped in medico-legal cases, identifying accident victims and investigating bite marks. This survey is in line with the empirical role of forensic odontologists in disaster management and victim identification by maintaining well-structured, comprehensive and accurate dental records for teaching and research purposes, as well as for legal matters.¹¹ Another study highly recommends mandatory-quality dental records that are kept efficiently and easily accessible.¹²

Knowledge related to maintaining dental records for forensic and medicolegal purposes may be insufficient indicating the need for proper education and training and the need for further training.¹³ This contradicts research carried out in Saudi Arabia where the majority of people in Saudi Arabia do not know that forensic odontology helps in medico-legal cases.⁸ In this survey, the majority of respondents did not know that forensic odontology can help in cases of sexual harassment and violence. A systematic review paper revealed that a large proportion of the public has insufficient knowledge of the ability of forensic odontologists to handle cases of abuse.¹⁴

Table 3 shows the responses to the perception statement. The willingness and rejection of respondents is important for successful data collection. Most of the respondents in this survey stated that they at least have the right to refuse to be recorded and the right to collect data from the national forensic odontology data collection. Applicants' participation for research purposes is entirely voluntary, however the criteria for participating in *databases* government-maintained for personal identification are usually different.¹⁵ In some

countries, it is mandatory for citizens to register their personal identities.¹⁶

When asked about their perceptions of the role of dentists in national forensic odontology data collection, the majority of respondents would trust them in their ability to maintain confidentiality, and in terms of expertise and knowledge. This is very important, because the patient-doctor relationship depends on trust, communication and respect.¹⁷ In general, most people consider the use of their personal information in data collection, to overcome this problem requires appropriate cybersecurity measures, which are more appropriate when dealing with government levels.¹⁸ In this survey, the majority of respondents wanted to provide their dental information in the future national forensic odontology data collection, this is contrary to research conducted in Saudi Arabia where the majority of Saudi Arabians refuse to register themselves in *the database* national forensic odontology.⁸

In table 4, the average level of public knowledge and perception regarding forensic odontology is still categorized as moderate. This is in line with previous research which assessed the insufficient knowledge and awareness of forensic odontology in the community and research conducted in Saudi Arabia said the knowledge and awareness of the people in Saudi Arabia was still very low.^{19,8}

Although crime films and documentaries are available on television, not all societies will be exposed to this. The most important factor identified for data collection is the advertiser media related to the benefits of data collection.²⁰ This is the reason why researchers believe that a vital component in the success of increasing people's knowledge, changing their awareness, and increasing their attitudes towards forensic odontology is its marketing, which involves disseminating knowledge regarding forensic dentistry through social media, television and health care facilities.

Table 5 shows the relationship between the level of knowledge and the characteristics of the respondents. Based on the education level, the respondents who

attended school and university had different levels of knowledge. This is in line with research conducted in Saudi Arabia which states that there are differences in the level of knowledge between respondents who attend school and university level. Education affects the learning process, the higher a person's education, the easier that person will receive information.^{8,21}

Table 6 shows the relationship between the level of perception and the characteristics of the respondents. Based on the level of education, respondents who attended school and university had different levels of perception. There are also differences in the level of perception between respondents who work and do not have a job. A person's perception can be influenced by individual attitudes and characteristics, family background, information obtained by knowledge and the needs of the surroundings.^{22,23}

People's perceptions are a reflection of what they feel and what they fear and / or want more. Increasing participants' knowledge is an important factor where misunderstandings can be corrected and expectations improved.⁸ Researchers believe that every perception statement used in this survey represents an opportunity to increase knowledge. However, there are limitations in this research. Some of the anatomical terms of the oral cavity may be unclear to some respondents, even when translated into local dialects.

Conclusion

The level of knowledge and perceptions about forensic odontology in Makassar City people aged \geq 18 years is still around 60% who answered questions correctly and responded positively. It is hoped that the improvement of public knowledge regarding the importance of forensic dentistry is expected to increase public awareness and encourage participation in data collection. Therefore, socialization is needed through social media, television and health care facilities. The public's desire to carry out dental data collection is very helpful in accelerating the legal process and also in identifying individuals.

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