

## Relationship between Knowledge, Attitude, and Behavior on Head and Neck Cancer among Health Workers and Community in Bandung, Indonesia

Yussy Afriani Dewi, Ifiq Budiyan Nazar

Department of Otorhinolaryngology-Head and Neck Surgery Faculty of Medicine  
Universitas Padjadjaran/Dr. Hasan Sadikin General Hospital Bandung, Indonesia

### Abstract

Head and neck cancer is the sixth most common cancer in the world with increasing incidence and mortality in the last three decades. The hidden location of head and neck tumors and their atypical symptoms cause difficulties in diagnosis. Most patients are first diagnosed at an advanced stage. Several factors allegedly related to the incidence of head and neck cancer are knowledge and attitude of the public on early detection of cancer. This study aimed to determine the relationship between knowledge, attitude, and behavior of health workers and community towards head and neck cancer in Bandung, Indonesia. This was a cross-sectional analytical descriptive study using chi-square test as the statistical test. Subjects for this study were sampled using the proportional cluster random sampling on health care workers and community in 30 community health centers in Bandung City during the period of July–August 2019. Data were obtained through a questionnaire distributed to the subjects. This questionnaire included items on knowledge, attitude, and behavior towards head and neck cancer. Of the 650 respondents, most were 40–49 years old (25%), female (62,2%), patients (74%), high school (49%). The levels of knowledge and attitude have a significant relationship with the behavior of early detection of head and neck cancer ( $p=0.015$ ). The awareness and knowledge of health workers and community on early detection of head and neck cancer are high in Bandung, Indonesia.

**Keywords:** Attitude, behavior, early detection, head and neck cancer, knowledge

## Hubungan Pengetahuan, Sikap, dan Perilaku Tenaga Kesehatan dan Masyarakat dengan Kanker Kepala Leher di Kota Bandung, Indonesia

### Abstrak

Kanker kepala leher merupakan kanker terbanyak keenam di dunia dengan insidensi dan kematian yang meningkat dalam tiga dekade terakhir. Letak tumor kepala dan leher yang tersembunyi dan gejala yang tidak khas menyebabkan kesulitan diagnosis. Kebanyakan pasien pertama kali didiagnosis pada stadium lanjut. Beberapa faktor yang diduga berhubungan dengan kejadian kanker kepala leher adalah pengetahuan dan sikap masyarakat tentang deteksi dini kanker. Penelitian ini bertujuan mengetahui hubungan pengetahuan, sikap, dan perilaku petugas kesehatan dan masyarakat dengan kanker kepala dan leher di Kota Bandung, Indonesia. Penelitian ini menggunakan desain potong lintang deskriptif analitik dengan analisis uji *chi-square*. Pengambilan sampel dalam penelitian ini menggunakan metode proporsional *cluster random sampling*. Penelitian dilakukan di 30 puskesmas di kota Bandung. Pengambilan data dilakukan pada Juli–Agustus 2019. Data didapatkan dengan mengisi kuesioner pengetahuan, sikap, dan perilaku mengenai kanker kepala leher. Dari 650 responden, sebagian besar berusia 40–49 tahun (25%), perempuan (62,2%), pasien (74%), SLTA (49%). Tingkat pengetahuan dan sikap memiliki hubungan yang signifikan dengan perilaku deteksi dini kanker kepala leher ( $p=0.015$ ). Berdasar atas kuesioner diperoleh tingginya tingkat kesadaran dan pengetahuan petugas kesehatan dan masyarakat terhadap deteksi dini kanker kepala leher di Kota Bandung.

**Kata kunci:** Deteksi dini, kanker kepala dan leher, pengetahuan, perilaku, sikap

---

**Corresponding author:** Yussy Afriani Dewi, Department of Otorhinolaryngology-Head and Neck Surgery Faculty of Medicine, Universitas Padjadjaran/Dr. Hasan Sadikin General Hospital Bandung, Jalan Pasteur No. 38 Bandung, West Java, Indonesia, Email: [yussy.afriani@unpad.ac.id](mailto:yussy.afriani@unpad.ac.id)

## Introduction

Head and neck cancer (HNC) is the sixth most common cancer worldwide.<sup>1,2</sup> In the United States, about 21,000 new cases of oral cancer are diagnosed each year and it has been estimated that more than 650,000 new cases of head and neck cancer are reported each year worldwide with a mortality rate of 350,000 cases per year, two-thirds of them in developed countries.<sup>3,4</sup> In India, on an average 25-30% of all cancer cases affect the head and neck. Due to the increasing prevalence of cancer in South East Asia, it has been predicted that the death rate will also increase by 75% in 2020 as compared to 2000. India is one among these countries that runs a major risk of producing this cancer burden to South East Asia.<sup>5,6</sup> It is not unexpected that HNC is the most common cancer affecting Indonesian males, accounting for 8.7% of all new cancer cases each year and with over 30% of the total Indonesian population estimated to be at risk for HNC.<sup>7</sup> Cases of head and neck cancer in the Department of ORL-HNS Dr. Hasan Sadikin Hospital were 2952 patient from 2013–2018, the highest was nasopharyngeal carcinoma, and more common in men than in women.<sup>8</sup>

Head and neck cancer develops as the result of interactions between environmental factors and genetic inheritance, and is therefore multifactorial. This tumor type occurs mainly in male individuals, and its occurrence increases with age. Over the last decade, there has been a significant increase in this cancer among younger individuals, possibly due to increased numbers of infections by the human papillomavirus (HPV).<sup>9,10</sup>

Delay in diagnosis and treatment of cancer is a major cause of death in cancer patients. Most patients are first diagnosed at an advanced stage and show difficulty in obtaining an early diagnosis. When HNC are diagnosed at a later stage survival rate is poor. The high rate of disease morbidity is also indirectly related to community behavior, such as knowledge with attitudes and actions that are not in accordance with the knowledge of the community itself. Therefore, knowledge of health and the behavior of seeking appropriate public health services is very important to decrease mortality due to head and neck cancers.<sup>11</sup>

Several studies have been conducted in America gauge the public's awareness and knowledge of HNC. The study showed that there is a gap in the knowledge of American Indians about the risk factors and symptoms

of HNC.<sup>12</sup> Bukhary et al<sup>13</sup> found Saudi Arabian people to be poorly informed about HNC. Lack of public awareness is considered a potential barrier to early detection of HNC. Bamhisoun et al,<sup>14</sup> reported that lack of knowledge and awareness in several aspects of the HNC area among undergraduate dental students at King Abdulaziz University Faculty of Dentistry. There is limited documentation on knowledge of HNC in low and middle income countries to date, especially among high risk populations.<sup>15</sup> Earlier studies in Indonesia focused primarily on two subtypes of HNC and assessed awareness among the general and elderly populations and among medical practitioners.<sup>16,17</sup>

This study aims to determine the relationship level of knowledge, attitude, and behavior of health workers and society towards head and neck cancer in Bandung City, Indonesia.

## Methods

Participants in this study were patients, family of the patients and health workers in health center who met the inclusion and exclusion criteria. The inclusion criteria included participants aged  $\geq 15$  years (the eligible participants i.e. adolescent and young adults), and willing to become participants. The exclusion criteria included those experiencing mental health problems. Participants must first read the informed consent and understanding the objectives and benefits of the research.

This research used a cross sectional analytic study. The study sample was taken for 1 month (July–August 2019 period). The study was conducted at public health centers in the city of Bandung. By using stratified random sampling method, the location was taken from 1 public health in each sub-district with the most population coverage, so that 30 public health centers were researched. Sampling was done by consecutive sampling. The research samples were patients/patient families and health workers who were at public health center who met the inclusion and exclusion criteria.

This research received ethical approval at the Hasan Sadikin Hospital Bandung Health Research Ethics Committee (LB.02.01/X.6.5/185/2019). Participants filled out a questionnaire regarding characteristic participants, knowledge, attitude, and behavior towards head and neck cancer.

The survey was available in hard copy (paper version). The survey was divided into 4 sections. In the first part containing respondent's

characteristic including cancer history and family history. The second portion of the survey included several multiple-choice questions that assess knowledge about HNC. There were 12 questions on knowledge, the topics included identifying HNC risk factors, clinical signs, symptoms, and common tumor locations. For the objective portion, a point value was assigned to the correct answer and respondent were assessed based on the number of points they earned for this portion of the questionnaire. The third area of the questionnaire inquired about attitude towards HNC. There were 11 questions about attitude by answering agree or disagree. Attitude responses were recorded, and trends were identified. The fourth section on behavior contains 8 questions. The questionnaire was declared valid with a value of  $r=0.247-0.505$  (knowledge),  $0.257-0.628$  (attitude),  $0.582-0.699$  (behaviour) and reliable with a value of Ratability Coefficient =  $0.221$  (knowledge),  $0.247$  (attitude), and  $0.528$  (behavior). All questions were answered directly by the respondents by selecting the statement that fit best with the respondent's situation.

The knowledge divided in 2 criteria and can be interpreted with a qualitative scale: good of knowledge if the respondent answers the question correctly and the percentage is  $\geq 70\%$ . Lacks knowledge if the answer is wrong and the percentage is  $< 70\%$ .<sup>18</sup> The minimum score is 7 and the maximum score is 12. The wrong answer scores 0 and the correct answer scores 1.

Attitude assessment uses a Likert scale. Positive statements: strongly agree (4), agree (3), disagree (2), strongly disagree (1). Negative statements: strongly agree (1), agree (2), disagree (3), strongly disagree (4).<sup>19</sup>

Behavior divided into 2 criteria, positive statements (yes) if the respondent answers according to the behavior of early detection of head and neck cancer and negative statements (no) if the answer is not appropriate. Positive statements: score 1 (yes) and score 0 (no). Negative statements: score 1 (no) and score 0 (yes).

Measurement data were displayed in tabular form and analyzed using IBM SPSS statistics software version 23.0. All answers to the questionnaire are added up for each answer to each question, converted into percentages and then analyzed with *chi-square* test.

## Results

All the 650 respondents, with the community consisting of patients or family patients as many as 480 people (74%) and health workers as many as 170 people (26%). Most respondents in this study aged 40–49 (25%), with the youngest and oldest respondent was 15 years old and 73 years old, respectively, with a mean of 38.43 years old. Most participants were female (62.2%). Most of them had senior high school education (49%), followed by diploma/college (21%). Participant's occupation was evenly distributed among various professions. Most participants were married (77%). Most participants not have a family history of HNC (97%) and not have mass personal history (92%) (Table 1).

Level of knowledge, attitude, and behavior towards head and neck cancer was obtained by interviewing health workers and patients at 30 public health centers in Bandung. Most of the respondents had good knowledge, positive attitude, and good behavior from the collected data. Researchers found in 501 (77%) out of 650 respondents with good knowledge of head and neck cancer. Respondents with positive attitude 630 (97%) and good behavior 611 (94%) out of 650 respondents towards head and neck cancer (Table 2).

Bivariate analysis in this study was conducted to determine the relationship between the level of knowledge, attitudes, and characteristics with the behavior of early detection of head and neck cancer and the relationship between knowledge and attitudes towards early detection of head and neck cancer.

Respondents who have good behavior majority have good knowledge, namely 84% and positive attitude (88.4%). From the results of the analysis using the *chi square* test, it was found that the level of knowledge had a significant relationship with the behavior of early detection of head and neck cancer with a p-value of 0.015 (p-value  $< 0.05$ ). This shows that the high level of knowledge about early detection of head and neck cancer, the better the behavior of early detection of head and neck cancer. Attitude with early detection behavior of head and neck cancer has a significant relationship (p-value 0.015). This shows that the more respondents have a positive attitude towards early detection of cancer, the better their behavior towards early detection of head and neck cancer (Table 3).

**Table 1 Characteristic of Respondents**

	<b>Number</b>	<b>Percentage (%)</b>
<b>Respondents</b>		
Patients/family patients	480	74
Health workers	170	26
<b>Sex</b>		
Male	246	37,8
Female	404	62,2
<b>Age group</b>		
15–19	47	7
20–29	126	20
30–39	142	22
40–49	158	25
50–59	94	14
60–69	55	8
>70	28	4
<b>Education</b>		
No school	4	0,6
Elementary school	73	11,2
Junior high school	119	18,2
Senior high school	319	49
Diploma/College	135	21
<b>Marital status</b>		
Not married	117	18
Married	503	77
Widow/er	30	5
<b>Occupation</b>		
Does not work	75	11,5
Housewife	123	18,9
Labor	96	14,7
Farmer	54	8
Private employees	67	10,3
Entrepreneur	84	13
Government employees	106	16,3
Student	8	1,2
Retired employees	37	5,6
<b>Family history of head and neck cancer</b>		
Yes	15	3
No	635	97
<b>Respondent's personal history</b>		
Tumor	41	6
Cancer	15	2
No mass	594	92

**Table 2 Level of Knowledge, Attitude, and Behavior Towards Head and Neck Cancer**

Variable	Number	Percentage (%)
Knowledge		
Lack	149	23
Good	501	77
Attitude		
Positive	630	97
Negative	20	3
Behavior		
Yes	611	94
No	39	6

Based on the results of the cross tabulation in Table 4, it was found that age and education had a significant relationship with the level of knowledge about head and neck cancers ( $p < 0.05$ ).

### Discussion

In our study majority respondents were between 40–49 (25%) years old, followed by 30–39 (22%), and 20–29 (20%) years age group. Age can determine the level of maturity in thinking and working, this is related to the knowledge and experience gained during life and can affect a person’s behavior.<sup>20</sup> The age group including in the productive age group that has the potential to get the risk of disease from work and endurance. This is according to with Damayanti et al,<sup>21</sup> study

**Table 4 Cross Tabulation of Knowledge and Attitude towards Characteristics of Respondent**

Characteristics	p-value	
	Knowledge	Attitude
Age	0.035	0.368
Education	0.004	0.271
Martial status	0.648	0.637
Occupation	0.779	0.82
Family history	0.985	0.55

at Health Care accredited as main and plenary accreditation in Semarang which stated that 70.85% of visitors were of productive age. Most respondents in this study were female (62.2%). Moreover, most of them were married (77%) and most occupation respondents were housewife (18.9%). This finding is in accordance with Damayanti et al study reported that 58.3-66% visitor at health care in Semarang were female. The females are more susceptible to disease and want medical assistance more quickly if they experience health problems than male.

From the results of the study, most respondents had senior high school (49%) followed diploma/college (21%). A high level of education will also indirectly provide personal experiences that can be used as an effort to gain knowledge in solving the problems faced.<sup>18</sup> Aside from the education level, experience, and cultural factors, there are other factors that are closely related to the knowledge of HNC. Education is a process of changing attitudes and behavior of a person or group and also an effort to mature humans through teaching and training efforts.

**Table 3 Relationship between the Level of Knowledge And Attitude with Behavior Early Detection of Head and Neck Cancer**

Knowledge and Attitude	Behavior (Early Detection)				p-value*
	Yes		No		
	n	%	n	%	
Knowledge					
Good	483	84	92	16	0.015
Lack	40	53.3	35	46.7	
Attitude					
Positive	328	88.4	43	12.6	0.015
Negative	182	65.2	97	34.8	

\*Chi square test

Education affects the learning process, the higher a person's education, the easier it is for that person to receive information. With higher education, someone will tend to get information, both from other people and the mass media.<sup>19</sup>

In this study, participants obtained HNC knowledge from information and experience that would make them easier to understand HNC, particularly regarding the definition, risk factors, signs and symptoms, causes, and ways of early detection of HNC. Knowledge is information known or recognized by someone. Knowledge is not limited to descriptions, hypotheses, theoretical concepts, principles, and procedures which are probably true or useful. Knowledge is divided into two categories namely the knowledge obtained by observation and the observation made empirically and rationally and knowledge gained through reasoning, later known as rationalism.<sup>19</sup>

Based on earlier studies by Dwojak et al,<sup>12</sup> and Luryi et al,<sup>22</sup> reporting low HNC knowledge in non-Indonesian populations. Study participants were most deficient in knowledge of signs and symptoms of HNC, which poses serious health concerns from the standpoint of measures on HNC prevention, early diagnosis, and recognition of disease. This contradicts the results we got, 77% respondent have a good level of knowledge and 97% have a positive attitude. There is strong evidence that patients who lack awareness of the cardinal signs and symptoms of HNC may fail to seek medical attention at the early, treatable stages of the disease.<sup>23,24</sup>

When participants were asked about their knowledge of head and neck cancers, it came out that, level of knowledge about HNC was good (77%) and poor (23%). Chi-square statistical test results obtained p value=0.015, which means that there is a significant relationship between the level of knowledge with early detection of head and neck cancer. This is consistent with the theory which states that behavior is still an obstacle for the community to conduct early detection of head and neck cancer. Increased knowledge will not always cause behavioral change, but shows a positive relationship between the two variables so that if the level of knowledge is high then the behavior tends to be good.<sup>25</sup>

Attitude is a person's closed response to a particular stimulus or object, which is already involved in approval and approval factors (happy not happy, agreeing, disagreeing, good or not, and so on). Attitude is not yet an action or activity, but it is a predisposition to the action of

a behavior. The existence of a good attitude can be caused by knowledge, training, as well as a lot of experience gained.<sup>25</sup>

Based on the results of the study showed that respondents with a good attitude tend to have good early detection of head and neck malignancy behavior. This can be explained that respondents who have early detection of good head and neck cancer by 3% have less attitude, as many as 97% have a good attitude. The results of the chi-squared statistical test obtained p-value =0,015, which means that there is a significant relationship between attitude and behavior of early detection of head and neck cancer. Attitudes are general evaluations, reaction or response made by humans on themselves, others, or issues in circulation. If someone's reaction or response is positive then one's behavior also tends to be positive as well if someone's reaction or response is negative then that person's behavior also tends to be negative too. So that if someone agrees or has a positive attitude towards the screening examination of the head and neck malignancy, then based on the theory a person will conduct an early detection examination.<sup>13</sup>

Therefore giving counseling to the community, especially in the city of Bandung, is very useful because that way the public can find out the factors and signs of symptoms of head and neck cancer, so that people can detect early on these things. Health workers should be initiated like various other national programmes, and important danger signs of HNC, and they have to be aware regarding the condition and has to be referred immediately to the tertiary care centre, so that early detection and diagnosis can be established. Cost effective screening which can detect cancers at an early, treatable and less costly stage, is an important part of delivering affordable cancer care in Bandung.

The limitations of study were the researcher, did not directly interview the respondent, lack of time in study, few information regarding participant's deepen knowledge and attitude towards head and neck cancer.

Based on the questionnaire obtained the high level of awareness and knowledge of health workers and society against early detection of head and neck cancer in Bandung City.

### Acknowledgement

We would like to thank for Harrie Luvian, Askani Maulida, Nadiya Ulhaq Hidayat, Lia Novilla

Yatmika Sari, Nisrina Nabila Heryana, Dede Randian, Aldirra Nauva, Fauzan Ramadhan as volunteers and data collection questionnaire.

## References

1. Siegel R, Naishadham D, Jemal A. Cancer statistics, 2013. *CA Cancer J Clin.* 2013; 63(1):11-30.
2. Gupta B, Johnson NW, Kumar N. Global epidemiology of head and neck cancers: a continuing challenge. *Oncology.* 2016;91(1):13-23.
3. Heroiu AD, Danciu CE, Popescu CR. Multiple cancers of the head and neck. *Maedica J Clin Med.* 2013;8(1):80-5.
4. Tobungan N, Wijayanti N. Epidemiologi, stadium, dan derajat diferensiasi kanker kepala dan leher. *Biogenesis.* 2015;3:47-52
5. Ferlay J, Steliarova-Foucher E, Lortet-Tieulent J, Rosso S, Coebergh JW, Comber H, et al. Cancer incidence and mortality patterns in Europe: estimates for 40 countries in 2012. *Eur J Cancer.* 2013;49(6):1374-403.
6. Mishra A, Meherota R. Head and neck cancer: global burden and regional trends in India. *Asian Pac J Cancer Prev.* 2014;15:537-50.
7. World Health Organization (WHO). Global cancer observatory: Indonesia, 2020 [cited 2020 Dec 21]. Available from: URL: <https://gco.iarc.fr/today/data/factsheets/populations/360-indonesia-fact-sheets.pdf>.
8. Nathania N, Dewi YA, Permana AD. Profile of head neck cancer patients from 2013-2018 at Dr. Hasan Sadikin General Hospital Bandung. *ORLI.* 2020;51(21):141-5.
9. Vaezi A, Grandis JR. Head and neck tumor biology. In: Johnson JT, Rosen CA, Newlands S, Amin M, Branstetter, Casselbrant M, et al, editor. *Bailey's head and neck surgery-otolaryngology.* 5<sup>th</sup> ed. Vol 2. Philadelphia: Wolters Kluwer, Lippincott Williams & Wilkins. 2014. p. 1648-71.
10. Fitzmaurice C, Allen C, Barber RM, Barregard L, Bhutta Z, Brenner H, et al. Global, regional, and national cancer incidence, mortality, and disability-adjusted life-years for 32 cancer groups, 1990 to 2015: a systematic analysis for the global burden of disease study. *JAMA Oncol.* 2017;3(4):524-48.
11. Manickam A, Saha J, Ghosh D, Sengupta S, Biswas D, Basu SK, et al. Community awareness-A key to the early detection of head and neck cancer. *Bengal Journal of Otolaryngology and Head Neck Surgery.* 2016;24(1):7-14.
12. Dwojak S, Deschler D, Sargent M, Emerick K, Guadagnolo BA, Petereit D. Knowledge and screening of head and neck cancer among American Indians in South Dakota. *Am J Public Health.* 2015;105(6):1155-60.
13. Bukhary S, Alreheli R, Albahiti MH, Al-Dabbagh RA, Al-Hazmi N, Alhazzazi T. Awareness and knowledge of head and neck cancer risk: Saudi adults know enough?. *J Int Oral Health.* 2020;22(3):226-30.
14. Bamhisoun MM, Alqahtani RS, Bogari DF, Al Hazmi N, Bukhary S, Jan AM, et al. Assessment of head and neck cancer knowledge and awareness levels among undergraduate dental students at King Abdulaziz University Faculty of Dentistry. *J Dent Health Oral Disord Ther.* 2017; 8(4):568-73.
15. Joshi P, Dutta S, Chaturvedi P, Nair S. Head and neck cancers in developing countries. *Rambam Maimonides Med J.* 2014;5:e0009.
16. Wimardhani YS, Warnakulasuriya S, Subita GP, Soegyanto AI, Pradono SA, Patoni N. Public awareness of oral cancer among adults in Jakarta Indonesia. *J Investig Clin Dent.* 2019;10(1):e12379.
17. Fles R, Indrasari SR, Herdini C, Martini S, Isfandiari A, Romdhoni AC, et al. Effectiveness of a multicentre nasopharyngeal carcinoma awareness programme in Indonesia. *BMJ Open.* 2016;6(3):e008571
18. Budiman, Riyanto A. *Kapita selekta kuesioner pengetahuan dan sikap dalam penelitian kesehatan.* Jakarta: Salemba Medika; 2013.
19. Wawan A, Dewi M. *Teori dan pengukuran pengetahuan, sikap dan perilaku manusia.* Yogyakarta: Nuha Medika; 2011.
20. Kofi AK, Vormawor R, Vanderpuye VD, Opoku S. Knowledge, attitude and perceptions of head and neck radiotherapy in Ghana. *World J Epidemiol Cancer.* 2015;4(1):1-20.
21. Damayanti NA, Jati SP, Fatmasari EY. Analisis perbedaan tingkat kepuasan pasien terhadap mutu pelayanan rawat jalan puskesmas berstatus akreditasi utama dan paripurna di Kota Semarang. *Jurnal Kesehatan Masyarakat.* 2018;6(5):124-34.
22. Luryi AL, Yarbrough WG, Niccolai LM, Roser S, Reed SG, Nathan CAO, et al. Public awareness of head and neck cancers: a cross-sectional survey. *JAMA Otolaryngol Head Neck Surg.* 2014;140(7):639-46.
23. Ligier K, Dejardin O, Launay L, Benoit E, Babin E, Bara S, et al. Health professionals and the early detection of head and neck

- cancers: a population-based study in a high incidence area. *BMC Cancer*. 2016;16:456.
24. Conway DI, Brenner DR, McMahon AD, Macpherson LM, Agudo A, Ahrens W, et al. Estimating and explaining the effect of education and income on head and neck cancer risk: INHANCE consortium pooled analysis of 31 case-control studies from 27 countries. *Int J Cancer*. 2015;136(5):1125–39.
25. McEachan RRC, Conner M, Taylor NJ, Lawton RJ. Prospective prediction of health-related behaviours with the theory of planned behaviour: a meta-analysis. *Health Psychol Rev*. 2011;5(2):97–144.