Research

Self-perceived health-related factors in Deaf Community in East Java, Indonesia

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ABSTRACT

Background: Little is known about the perceived health of the Indonesian Deaf despite the rapid growth of the Deaf Community and social organizations. **Objective:** To investigate self-perceived health and related determinants among deaf adults in a Deaf Community in East Java, Indonesia. **Method:** A survey study was conducted on 102 community members. Perceived health was assessed using a question: ”In a scale of 1 to 10, how much will you give to rate your health?”. After stepwise suggestion and collinearity analysis, the association of demographic and health conditions was analyzed using logistic regression. **Result:** A high perceived health scale was reported from 77% of the members. Low perceived health was mainly stated by individuals from of 25–45 age, female, married, and working groups. Although most had no health complaints in the last month, 60% were hospitalized in the previous year. Lower educational levels, owned health insurance, frequently consuming vegetables and fruits, and never being hospitalized were associated ($p<0.05$) with higher self-perceived health. **Conclusion:** Despite the high self-perceived health reported from most Deaf Community members, the overall self-reported health conditions of Deaf Community members are still a concern due to the high rate of hospitalization and lack of objective health assessment.

Keywords: community health, health status, hearing loss, risk factors, Deaf Community

ABSTRAK

Latar belakang: *Masih belum banyak yang diketahui tentang persepsi kesehatan dirinya para anggota Komunitas Tuli di Indonesia meskipun komunitas dan organisasi sosial terkait disabilitas ini berkembang pesat.* ***Tujuan:*** *Untuk mengetahui tingkat kesehatan yang dinilai oleh diri sendiri pada Komunitas Tuli di Jawa Timur, Indonesia.* ***Metode:*** *Survei dilakukan pada 102 anggota komunitas Tuli. Status kesehatan yang dinilai dipersepsikan dinilai menggunakan pertanyaan:”Dalam skala 1 sampai 10, berapa angka yang akan Anda berikan untuk menilai kesehatan anda?”. Setelah dilakukan analisis* stepwise *dan kolinearitas, hubungan demografi dan status kesehatan dianalisis menggunakan regresi logistik.* ***Hasil:*** *Skala persepsi kesehatan yang dirasakan tinggi dilaporkan oleh 77% subjek. Persepsi kesehatan yang rendah terutama dinyatakan oleh individu berusia 25-45 tahun, perempuan, menikah, dan kelompok kerja. Meskipun sebagian besar tidak memiliki keluhan kesehatan dalam sebulan terakhir, 60% pernah dirawat di rumah sakit pada tahun sebelumnya. Tingkat pendidikan yang lebih rendah, memiliki asuransi kesehatan, sering mengkonsumsi sayuran dan buah-buahan, dan tidak pernah dirawat di rumah sakit berhubungan ($p<0,05$) dengan persepsi kesehatan diri yang lebih tinggi.* ***Kesimpulan:*** *Meskipun persepsi kesehatan diri yang tinggi dilaporkan oleh sebagian besar anggota Komunitas Tuli, kondisi kesehatan anggota secara keseluruhan masih perlu mendapat perhatian karena tingginya tingkat rawat inap dan kurangnya penilaian kesehatan yang objektif.*

Kata kunci: *kesehatan komunitas, status kesehatan, gangguan pendengaran, faktor risiko, Komunitas Tuli*

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INTRODUCTION

Deafness represents very little to no hearing, caused by different factors across a life span, including genetics, intrauterine infections, other infections or conditions of the ear, meningitis, aged-related degeneration, and trauma.[1,2] The World Health Organization (WHO) estimates that approximately 1.5 billion people have some degree of hearing loss, with more than half of the proportion residing in Southeast Asia and East Asia. WHO also predicts that the number of people with some degrees of hearing loss will increase to more than 2.5 billion, with 700 million of them needing rehabilitation by 2050.[1] The 2015 Indonesia inter-census population survey (SUPAS) reported that 3.34%, or around 8.9 million people, had over ten years of age experience being hard of hearing in Indonesia.[3]

Deafness is the leading cause of disability in men over the age of 60, and the second-highest cause of disability in women of the same age. A quarter of deaf individuals have an additional disability and have a high probability of developing complex mental disorders.[4] The Deaf Community comprises of deaf or hard of hearing individuals who communicate using sign language and have their own culture. However, it is challenging for them to adapt to the general community, including communicating their health conditions and well-being. This isolation may be the reason for the low amount of research on the deaf. Previous publications worldwide showed a more extensive survey on the impact of hearing loss on healthcare access disparity experienced by deaf individuals.[5–7] However, minimal evidence discussed the Deaf health status or perceived health due to communication problems. Like any other minority populations, deaf and hard-of-hearing persons have poorer health statuses than the general population, attributable to cultural and communication variations.[7–9]

Moreover, communication and language barriers isolate the Deaf from mass media, healthcare messages, and healthcare communication, which places them at high risk for inadequate health literacy.[6,10] They have the most significant risk for poor physician–patient communication.[5,7] Whether this causes their poorer health status and altered healthcare utilization pattern is still unclear. A similar challenge, and maybe even more, has been experienced in Indonesia.

The Deaf have a higher risk of cardiovascular disease, hypertension, diabetes, obesity, and depression.[4,8,11] Research on emotional problems and behavior in the Deaf Community had mixed results. Several studies had found that deviant behaviors, such as smoking and alcohol consumption, were twice as high in the Deaf community.[8,11] On the contrary, other studies did not find significant differences in smoking and alcohol consumption between deaf persons and the general population.[12,13] Furthermore, evidence had reported a high incidence of mental health problems in the deaf population.[14] Less physical activity and increased sedentary behavior are likely due to several aspects of isolation, including social relationships and available job opportunities. There are other significant disparities due to communication barriers, causing low health knowledge and lack of access to healthcare facilities. These two things are enough to lower the health awareness of the Deaf, thus reducing their overall health status.

This study evaluated the self-perceived health status of deaf adult in a *Deaf* community and explored the potential determinants (demographic, health insurance, existing health conditions, health complaints in the last month, ever been hospitalized in the last year, and lifestyles and habits). The current study found that low self-perceived health status was related to existing health condition, deaf women, working age group, without health insurance, and possessed deviant behaviors.

METHOD

The Deaf Community in Kediri, East Java, was known to have members belonging to a wide age range compared to other community. In addition, remarkable leadership made the community an ideal population for our research. Having 130 members in Kediri City and Municipality, a health survey was conducted on 102 adult community members. All members aged 21 and above were eligible as study respondents. Any member who had psychological issue reported by the community leader or relatives, would be excluded from the survey. The survey was conducted after the members signed the written informed consent. The School of Medicine and Health Sciences ethical committee board of the Atma Jaya Catholic University of Indonesia approved the study with clearance number #26/07/ KEP-FKIKUAJ/2020 on July 28th, 2020.

The survey, applying demographic, health-related condition, and non-communicable diseases (NCD) risk factors questionnaire modified form, was conducted offline and online. Face-to-face interviews were carried out and coordinated by a licensed sign language translator at the regular community meeting held monthly. After the first phase of the interview, online surveys were conducted disseminated due to social restrictions in place for the COVID-19 pandemic to cover members who had not attended the meeting. An instructional video performed by a sign language interpreter was distributed to ensure that the member understood each question and choice of answer in order to maintain the validity and reliability of answers.

Demographic information asked were: the member's age, birthdate, education level, marital status, occupation, monthly income, health insurance, and living arrangement. Health-related questions included chronic conditions diagnosed by health professionals, hospitalized in the last two years, how frequent they were sick the previous month, and self-rated health status. The self-rated health condition was asked using a short question on their perception of their health (if you rate your health, on a scale of 1–10, how high would you rate your health?). This self-rated health question was recommended by previous evidence showing a higher sensitivity to people with disabilities, including people with a hearing problem; the scale 1–10 was categorized for further analysis into low scales self-rated health (≤5) and high scales self-rated health (>5). The NCDs risk factor questions covered the physical activity frequency, vegetables and fruits consumption, smoking, and alcohol drinking habit.

Data analysis was conducted using the statistic software R (version 4.0.4, RC Team). Descriptive analysis of respondent characteristics was conducted based on low (≤5) and high (>5) self-rated scale groups. Continuous data was analyzed using the independent t-test for normally distributed data and the Mann–Whitney U test for skewed data. The mean and SD were estimated. The qualitative variable was analyzed using the chi-square test. Frequency and proportion were presented. Spearman correlation was performed on all independent variables; the correlation analysis showed a <0.5 correlation coefficient, indicating no multicollinearity. Finally, multiple logistic regression was carried out after selecting the independent variables through stepwise analysis to see any significant predictors on the perceived health of the hearing loss community.

RESULT

Demographic Characteristics

The demographic characteristics were described based on the scale of perceived health presented in Table 1. Overall, the perceived health status among the *Deaf* is generally high (77.5%) and relatively higher in men (79.5%) than in women (76.5%). Middle-aged groups were more likely to perceive a low health scale as compared to younger or older age groups. Single, living alone, having less educational attainment, not working, and having national health insurance tended to have a higher perceived health scale than their counterparts.

Physical health and NCD risk factors

Table 2 suggested that most community members did not experience any health complaints the previous month (46%). The primary health complaints were: common cold (27.4%) and headache (26.4%). About 14.7% of them had been diagnosed with hypertension by a health worker and 5% for type 2 diabetes. The health facilities they often encountered were public health centers (28.4%) and general practitioners (35.2%). Surprisingly, about 60% of them had been hospitalized last year. Even though we could not explore the valid causes, few members said it was difficult to relay all of their complaints to the health professionals in

Table 1. Demographic characteristics of Deaf Community member by perceived health status

Demographic characteristics	Perceived health scale				p-value
	Low (n = 23)		High (n = 79)		
	Freq.	%	Freq.	%	
Age (x ± SD)	30.6 ± 9.3		30.5 ± 11.8		>0.05
21–25	11	22.0	39	88.0	
25–45	10	27.0	27	73.0	>0.05
45	2	13.3	13	86.7	
Gender					
Male	8	20.5	31	79.5	>0.05
Female	15	23.8	48	76.2	
Marital status					
Single	14	21.8	50	78.2	>0.05
Married	9	27.2	24	72.8	
Living arrangement					
With parents/relatives	19	24.4	59	75.6	>0.05
Alone	4	16.6	20	84.4	
Education level					
0–9 years	4	8.3	44	91.7	<0.05
>9 years	19	35.2	35	64.8	
Expenses per month					
<IDR 1 million	18	21.4	66	78.6	
IDR 1–2 million	4	23.5	13	76.5	>0.05
>IDR 2 million	1	100.0	0	0.0	
Occupation					
Not working	9	21	43	79	>0.05
Working	14	28	36	72	

Health insurance					
No health insurance	11	31.4	24	68.6	>0.05
National Health Insurance	12	18.8	55	81.3	

the outpatients setting, so they preferred to be hospitalized. Few others said that the people who were closed to them also preferred to get them hospitalized because they cannot understand all the health complaints.

The smoking member had higher perceived health than the non-smoking member, and only a few consumed alcohols. Although there was a tendency to have less consumption of vegetables and fruits, and less exercise, there was no significant difference between low and high perceived health groups.

Perceived health status

Before the logistic regression was performed, few variables were re-categorized and included in the stepwise analysis. Those variables were questions about diagnosed NCDs (yes or no), practicing physical exercise (frequently or rarely), and vegetable and fruit consumption (frequently or rarely).

The stepwise analysis result showed several variables suggested were included in the equation model. Table 3 presented the logistic regression analysis on perceived health status.

Table 2. Physical health and NCDs risk factors

Health	Perceived health scale				p-value
	Low (n=23)		High (n=79)		
	Freq.	%	Freq.	%	
Feel sick in the previous month					
Yes	13	23.6	42	76.4	>0.05
No	10	21.3	37	78.7	
Health complaints in the last month					
Common cold	5	17.8	23	82.2	>0.05
Fever	2	40	3	60	
Nauseous	5	50	5	50	
Headache	7	25.3	20	74.7	
No complaints	10	21.3	37	78.7	
NCDs					
Hypertension	3	20	12	80	>0.05
Diabetes	2	40	3	60	
Never been diagnosed	33	40.2	49	59.6	
Ever been hospitalized in the last year					
Yes	23	37.7	38	62.3	>0.05
No	15	36.6	26	63.4	
Health facilities					
Public health center	9	31	20	69	>0.05

General Practitioner	13	36.1	23	63.9	
Health clinic/hospital	4	36.4	7	63.6	
Not going	12	46.2	14	53.8	
Smoking					
Yes	3	16.7	15	83.3	
No	20	23.8	64	76.2	>0.05
Drinking alcohol					
Yes	1	50.0	1	50.0	>0.05
No	22	22.0	78	78.0	
Physical activity (exercise)					
3–5 times a week	2	22.2	7	77.8	
1–2 times a week	3	14.3	18	85.7	>0.05
Occasionally	13	22.4	45	77.6	
Never	2	20.0	8	80.0	
Vegetable and fruit consumption					
Everyday	6	26.1	17	73.9	
Almost everyday	2	10.0	18	90.0	>0.05
2–3 times a week	1	7.7	12	92.3	
Occasionally	14	30.4	32	69.6	

The regression analysis indicates four factors associated with perceived health status in the hearing loss community after adjusted with age and gender ($p<0.05$). The Deaf Community member who had fewer education years, owning health insurance, consume vegetables and fruits frequently and never been hospitalized are significantly correlated with higher perceived health status.

Table 3. Factors associated with perceived health in the Deaf

Variable	Coeff.	Sig.
Educational attainment		
Less than nine years	2.62	<0.01
Owning health insurance	1.305	<0.05
Frequently consume vegetables and fruits	1.52	<0.05
Never been hospitalized	1.64	<0.05

DISCUSSION

The Deaf is often difficult to approach due to the high communication barrier. Studies about self-rated health in the Deaf are still scarce, particularly in Indonesia, due to enormous challenges regarding the validity of the methods and reliability of their responses. However, the study is not inferior due to the valuable information on perceived health status. Among adults, the perceived health status has been validated to measure physical health status and predict healthcare service utilization, mortality, morbidity, and risk behaviors, such as smoking, sedentary behavior, and alcohol consumption.15,16 Shandra17 stated that people with disabilities were more likely to have poorer self-rated health due to their circumstances, thus resulting in them being at greater risk of adverse health outcomes.

In Indonesia, the growing number of hearing loss community groups has risen remarkably in the last decade. One of the main objectives of these communities is introducing sign language to the general public, increasing the engagement of the Deaf in society, and narrowing the barrier of discrimination that they often feel (the conversation). The healthcare access disparity of the Deaf was well-documented in several other studies in different countries.5 The lack of health education and information, as well as instances of misdiagnoses were more prevalent in this community, hence making them more vulnerable to health problems.

Younger and older subjects have better-perceived health statuses than those in the middle age group. In line with previous studies, those of younger age had a higher scores regarding quality of life in all aspects.[18] At a more mature age, a person will have a higher awareness of their limitations and anxiety regarding their social life, work, and environment. Our research also showed that higher perceived health was significantly associated with less educational attainment. A study by Epel et al.[19] relayed that stress did not have a uniform physiological effect but was associated with integrated cognitive, affective, and behavioral responses that determined the psychobiological response to stress. Chen et al.[20] study in 2018 found a positive relationship between educational level and delaying disability. In their report, people with lower education levels had a lower mortality rate and late-onset of disability compared to their counterparts. The World Happiness Report did not show a relationship between education and positive and negative affirmations.[21] However, although lower education was associated with better health status, several studies had shown that achieving a higher education level had a strong link with health literacy and enhanced quality of life.[12,22] According to Kim et al.[23], education's role was significantly related with overall stress score and health status.

Individuals with hearing loss need health insurance. This study showed that among the respondents, only 66% to health insurance. The majority stated that they did not know how to health insurance acquire, while a few said they did not know the benefits of health insurance. Logistic regression analysis indicated that having health insurance in hearing loss communities was associated with higher perceived health status than their counterpart. Park et al.[15] research on health service satisfaction uncovered that patients with good and excellent perceived health status get higher patient satisfaction scores.

Apparently risk behaviors in the Deaf is differed by region and the pattern of social engagement. Tsimpida et al.[22] reported that 55.8% of the Deaf were tobacco smokers, while the rate in the general population was 32.5%. The median number of cigarettes smoked per day was higher in those with severe hearing impairment and the hearing loss individuals than in average adults. Other studies found no significant difference in cigarette consumption between the hearing loss population and the hearing population. Emond et al.[13] indicated that the Deaf seemed to have noted the health promotion messages about smoking due to a prominent visual warning on cigarette packaging, and lower alcohol consumption due to lack of social engagement and circles. They tended to have insufficient knowledge about crucial health issues. These knowledge gaps were often the results of peer misinformation, inadequate school instruction, parental reluctance to provide health education, and insufficient opportunities to acquire reliable information.[24] However, other studies revealed that risk behaviors were more likely to be adopted by the Deaf because of less exposure to health education and less access to health information.

Studies also stated that there was less consumption of healthy foods because

they were primarily in disadvantaged situations, with fewer job opportunities, being less educated, and with lower financial capital.[8,11,12] This situation made them unable to afford healthier food choices such as vegetables and fruits, thus explaining why frequently consuming vegetables and fruits might be related to higher financial capital and wellbeing. Besides, health promotion messages on healthy eating and regular exercise, being designed for the hearing population, did not reach the hearing loss community.

Further, the multivariate analysis showed the meaningful association of higher perceived health status with never having been hospitalized. Several subjects said it was difficult to relay all their complaints to the health professionals and people close to them, so they preferred to be hospitalized. This is in line with a study about hospital visitation that showed the Deaf have higher visitation to the hospital than the general public due to lack of care satisfaction, which made them go back and forth to the hospital, although they rarely visit emergency care.[13] The results highlighting the communication gap could lead in higher health-cost burden, especially when almost half of the members did not have health insurance. Intervention in both directions was needed; deaf community members could gain benefit from health information and communication held regularly by the community. Language and communication barriers created challenges in achieving information and communication held regularly by the community. This could be helped by inviting health professionals to educate them on how to communicate their health complaints using various ways of communication. On the other hand, interpreters may be needed in health facilities which people with hearing difficulties frequently visit.

Although the study is reporting the independent factors of Deaf self-perceived health, we acknowledged several limitations. First, the study of self-rated health needs to include objective assessments of health status such as anthropometric measurements, diagnostic approach, and relevant laboratory findings. Further study needs to be done with objective assessment. Second, due to the recent pandemic situation, the validity of online answers might be lower than direct interviews despite we provided the instructional video and contact person of help them need a helping hand to understand the questionnaire. The difficulty of reaching the Deaf outside the community circle might be why the study did not represent the whole population self-perceived health. Collaboration with any general community leaders in finding them, particularly the elderly with hearing loss, was needed.

Language and communication barriers create challenges in achieving optimal health status. Health information and accessibility to health services still do not adequately reach the Deaf population. Lower levels of education are known to be associated with better health status. However, education has a solid association to get good health literacy to improve the higher overall quality of life for the Deaf individual. Therefore, every Deaf must be supported to continue to improve his/her education level. Promoting health messages in healthy behaviors such as increasing consumption of fruits and vegetables, reducing smoking, reducing alcohol consumption, and the importance of having health insurance should cover the Deaf. Reducing miscommunication between health care workers and deaf individuals is expected to reduce dissatisfaction and achieve good health services to reduce unnecessary inpatient visits. Inviting health professionals to educate them on how to communicate health complaints using various ways of communication and providing interpreters in health facilities that people with hearing difficulties frequently visit are needed.

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