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Research

NONCOMMUNICABLE DISEASES PREVALENCE AND HEALTH-POST ATTENDANCE ASSOCIATED FACTORS IN AN URBAN SLUM AND A MIDDLE-INCOME COMMUNITY

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Abstract

Background Non-communicable Diseases (NCDs) become the leading cause of death, particularly in low-income settings. However, the health post for NCDs called *Pos Pembinaan Terpadu* (*Posbindu*) aimed to be the screening post in the community loses its function due to residents' low visitation.

Objective This study aimed to investigate NCD's prevalence in low-middle income communities and analyzed health-post attendance associated factors in two areas with different socioeconomic backgrounds.

Methods A community survey was conducted on a slum and a middle-income hamlet in Pejagalan village. A total of 470 residents aged 15 and above responded to the demographic and NCDs risk factors questionnaire. Logistic regression was performed separately in the two areas.

Results The prevalence of NCDs and its multimorbidity are presiding in the slum, while the health-post attendance in the area associated with women visitors (odds ratio [OR]=4.2; 95% confidence interval [CI]=1.9-9.1), the 30-59 age group (OR=5.0; 95%CI=2-10), having no education (OR=4.7; 95%CI=1.9-5.5), unemployed (OR=2.5; 95%CI=1.3-5.7), and practicing a less-fat diet (OR=3.2; 95%CI=1.7-6.0). The elderly were less likely to visit the posts (OR=0.3; 95%CI=0.1-0.9). Meanwhile, increasing age (OR=1.03; 95%CI=1.01-1,05), residents who practice regular physical activity (OR= 2.3; 95% CI=1.3-4.1), and not smoking (OR=2.9; 95%CI=1.4-6.0) were associated with community health-post attendance in middle-income hamlet.

Conclusion The results indicated that NCDs prevalence in the slum needs proper attention, particularly in elderly and male residents, due to low visits to the health post. Enhancing the specific target of NCDs screening respective to the areas would be the best effort to prevent further NCDs prevalence.

Keywords: Noncommunicable disease, Community health, Urban health, Social determinants.

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INTRODUCTION

Indonesia is experiencing an increasing trend in NCDs prevalence. In 2019, the overall estimated prevalence rate of NCDs was 70%. The 2018 Indonesia Basic Health Survey (*Riskesdas,* 2018) signifies the growth of cardiovascular diseases (1.5%), diabetes (8.5%), hypertension (34%), and abdominal obesity (31%) compared to the 2013 survey.[1] NCDs are more challenging to prevent and control because of their asymptomatic nature in the early stages, which accentuates the higher possibility of underreported cases.[2] The most common complication of hypertension is stroke, named as one of the most notable causes of death in Indonesia however, the compliance to therapy rate for hypertension patients, in particular, is deficient, counting only 54.4%.[1]

Thorough screening and monitoring of potential risk factors in patients is needed to address increasingly widespread NCDs. Indonesia is applying the community-based health service approach as a solution, while

other developing countries have also been implementing community-based health services as part of their health programs.[3–5] The services mainly focus on bringing health services closer to the community. Previous studies stating the potential strategy of a community-based program is improving health status.[5–7]

The community-based health service approach for NCDs called *Pos Pembinaan Terpadu (Posbindu)* in Indonesia developed in 2012.[3] *Posbindu* is an integrated monitoring activity, which helps in the early detection of NCDs risk factors managed by the community, usually held once a month. The implementation of *Posbindu* only escalated in the last four years. Until December 2017, a total of 950 *Posbindu* were established in Jakarta. However, many community units in Jakarta do not have any NCDs approach, such as *Posbindu*.[8] All of the existing community health posts for NCDs are struggling to accomplish 100% of their target to screen NCDs risk factors in the population aged 15 years and above.[9,10] The observation is impracticable, and even with alarming risk factors, community health posts still lack in regular attendance.

The socioeconomic status appears as a significant indicator of community health post utilization.[9] The urban areas in Indonesia, notably Jakarta, have more complex social structures stratified by many conditions. Dignified as the center of internal migration, Jakarta contains many ethnicities, blended cultures, and assimilations that might highlight the challenges of building community commitment in a health program compared to the rural area.[11–13]

Another problem that arises in Jakarta, as the capital city of Indonesia, is the growth of slums. The urban slum's residents are the most vulnerable people to contract diseases and get involved in criminal acts. The urban poor reported having a higher prevalence and destructive impact of NCDs because of limited access to health facilities and being more susceptible to unhealthy behaviors.[14–16] Despite the availability of *Posbindu* in slum areas, the utilization of this free-of-charge community health post is still minimal, and it has ultimately driven us to initiate the study. This study aims to uncover the NCDs prevalence and determine the significant predictors of community health-post attendance in two hamlets with different socioeconomic backgrounds in Jakarta to understand the local needs and their motivation to visit the health post.

METHODS

The community survey study was carried out in two small areas of Pejagalan village, Jakarta, Indonesia. The hamlets' names in Indonesia are based on a numbering system unit called *Rukun Warga (RW),* as the names are followed by a number. *RW* 13 and 15 are the study areas for community health discipline, School of Medicine, Atma Jaya Catholic University of Indonesia. The ongoing NCDs screening, prevention, and monitoring project is an initial project of the faculty. The community health post called *Posbindu* is technically required to operate in every hamlet, following the Indonesian Ministry of Health's instructions, to provide NCDs-risk screening access for people aged 15 years and above.[3] The project's locations were chosen as such because they do not have any NCDs approach in the community. The project started in early 2018. A total of five *Posbindu* have been established in those two areas, which operate twice a month, alternating between weekdays and weekends to accommodate residents having the nearest access to NCDs monitoring. No medications are provided in these health posts, as they are run by community health workers.

The slum hamlet was categorized based on Indonesia Statistical Bureau criteria, along with the middle-income hamlet.[17] Both hamlets had an estimated population of 15-year-olds and above of 2,300 and 1,700, respectively. The two areas are close to each other, with a distance of only one-to-two kilometers between the two areas. The sample size was computed accordingly, including 257 residents from the slum and 233 residents from the middle-income stratum. The study included permanent residents who stayed for at least a year in both areas. The systematic random sampling was delivered using family registration lists from the village office. Finally, one eligible adult was selected from each

household using random sampling, and written informed consent was gathered before the interview began.

Data were collected by interviewing eligible subjects using a pretested and structured questionnaire in *Bahasa Indonesia,* which contains sociodemographic questions, NCDs' conditions, and risk factors. The questionnaire for NCDs' condition and risk factor was modified from the World Health Organization (WHO) STEPwise approach to chronic disease risk factor surveillance (STEPS) questionnaire.[18] The trained field workers collected house-to-house data and acquired weight and height measurements using a body scale and tape measure following anthropometry's measurement technique.[19] To ensure the quality of the interview and quality data acquisition, the principal investigator carried out random checks as necessary. The institutional ethical committee in the school of medicine approved the study with number #33/08/KEP-FKUAJ/2019.

The statistical analysis has utilized R version 4.0.2. Univariate and bivariate analysis of the characteristics were carried out using the chi-square test. A conditional logistic regression was applied to identify the predictors of the community health-post attendance in a slum and middle-income hamlet, separately. The predictor variables were selected based on previous evidence in the health-seeking behavior theory and their current analysis effect.[20–22] The predictor variables with a p-value of ≤ 0.25 during the bivariate test were included in the logistic regression model.

RESULTS

The analysis included a total of 470 residents, with an average age of 44.4±14.2 years of the residents in the slum, and 43.5±12 years of the middle-income residents. The proportion of community health-post visitors is higher in the middle-income hamlet (50.6%) than in the slum (43.5%). The community health post attendance defines the study participants' sociodemographic characteristics in the two areas (Table 1).

Most of the study population was female (73%) and tended to have a low educational level (6th grade or less). Higher academic years proportion was higher in slum hamlet than in the middle-income. The number of elderly residents that visited the health post was found dominant in the middle-income residents (61%) than in the slum area (15%). In the working population, the middle-income hamlet also had a higher attendance ratio than in the slum (41.2% vs. 27.4%), as shown in Table 1.

Table 1. Study Population Characteristics by Community Health Post Attendance in Slum and Middle-income Hamlet

Characteristics	Community Health Post Attendance					
	Slum Hamlet		p	Middle-income Hamlet		p
	Yes	No		Yes	No	
	N(%)	N(%)		N(%)	N(%)	
Age (Mean±SD; Min-Max) in years	(44.4±14.2;16-96)			(43.5±12;18-73)		
<30	19(51.4)	18(48.6)	0.00	13(36)	23(64)	0.12
30-59	86(49.4)	88(50.6)		88(52)	81(48)	
≥60	7(15)	39(85)		17(61)	11(39)	
Gender						
Male	15(19)	63(81)	0.00	29(41.4)	41(58.6)	0.08
Female	97(54)	82(46)		89(54.6)	74(45.4)	
Marriage Status						
Married	10(50)	10(50)	0.01	103(50.2)	102(49.8)	0.31
Never married	97(46.6)	111(53.4)		5(38.5)	8(61.5)	
Divorced/widowed	5(17)	24(83)		10(67)	5(33)	
Education Level						
No education	45(39.5)	69(60.5)	0.00	66(53)	58(47)	0.14
Primary	37(63)	22(37)		29(59)	20(41)	
Secondary	51(74)	18(26)		21(39)	33(61)	
Higher	12(80)	2(20)		2(33.3)	4(66.7)	

Working Status						
Working	29(27.4)	77(72.6)	0.00	42(41.2)	60(58.8)	0.01
Not working	83(55)	68(45)		76(58)	55(42)	

The NCDs risk factors and lifestyle were described and stratified by community health post attendance and residency (Table 2). The proportion of overweight and obese people was higher in slum residents (62%). However, the percentage of overweight and obese group visits was lower (47%) than in middle-income residents (54%). Smokers and alcohol drinkers were not likely to visit the post in both hamlets. The residents who practice less salt and sugar diet, regular physical activity, and daily consumption of fruits and vegetables were likely to visit the post in both hamlets.

Table 2. The NCDs status and Risk Factors of Residents by Health Post Attendance in Slum and Middle-income Hamlet

NCDs Risks	Community Health Post Attendance					
	Slum Hamlet		p	Middle-income Hamlet		p
	Yes	No		Yes	No	
	Freq. (%)	Freq. (%)		Freq. (%)	Freq. (%)	
BMI (Mean±SD;Min-Max) kg/m²	(24.7±4.6;14.5-39.4)			(24.8±5.1;15.6-41)		
Underweight	8(40)	12(60)		6(32)	13(68)	
Normal	28(37)	48(63)	0.31	39(50)	39(50)	0.19
Over and Obese	76(47)	85(53)		73(54)	63(46)	
Smoking						
Yes	6(16)	31(84)	0.00	13(30)	30(70)	0.00
No	106(48)	114(52)		105(55.3)	85(44.7)	
Drinking Alcohol						
Yes	2(14.3)	12(85.7)	0.02	1(11)	8(89)	0.02
No	110(45.3)	133(54.7)		117(52)	107(48)	
Less Salt Diet						
Yes	48(63)	28(37)	0.00	52(66.7)	26(33.3)	0.00
No	64(35.4)	117(64.6)		66(42.6)	89(57.4)	
Less Sugar Diet						
Yes	44(55)	36(45)	0.01	53(65)	28(35)	0.00
No	68(38.4)	109(61.6)		65(43)	87(57)	
Less Fat Diet						
Yes	50(56.8)	38(43.2)	0.00	66(61)	42(39)	0.00
No	62(36.7)	107(63.3)		52(42)	73(58)	
Vegetable & Fruits daily						
Yes	55(58)	40(42)	0.00	67(63.2)	39(36.8)	0.00
No	57(35)	105(65)		51(40.2)	76(59.8)	
Regular Physical Activity						
Yes	49(54.4)	41(45.6)	0.01	66(64.7)	36(35.3)	0.00
No	63(37.7)	104(62.3)		52(40)	79(60)	
NCDs Status						
With NCDs	72(46.5)	83(53.5)	0.25	80(58)	58(42)	0.00
Without NCDs	40(39)	62(61)		38(40)	57(60)	

The prevalence of NCDs was higher in the slum (60.3%) than in the middle-income residents (59%). The type of NCDs assessed in the study were obesity, diabetes, and hypertension. Overweight and obesity prevalence dominated both hamlets, accounting for 62% in the slum, and 58% in the middle-income stratum, followed by hypertension and diabetes.

There was no significant association between the type of NCDs and the community health-post attendance. Nevertheless, there were a few points to note in both hamlets regarding the residents' NCDs status and community health-post utilization. The proportion of NCDs multimorbidity was more common in the slum hamlet (21.4%) than in the middle-income hamlet (16%). In the slum, the trend showed, that residents with multimorbidity had a higher likelihood of visiting *Posbindu* (83.3%), while residents without NCDs occupy the lowest proportion (40%). On the other hand, in middle-income hamlet, the residents with hypertension and diabetes co-morbidities were dominant visitors (66.7%). Meanwhile, residents with mere hypertension were the least (38.2%).

Table 3 presents the logistic regression analysis of the predictors associated with community health-post attendance. The logistic regression analysis applied to the slum and middle-income hamlet separately, using stepwise regression to see the best-fit predictor's model. The results indicate different predictors in both hamlets.

In the slum, women were more likely to utilize the health post (OR=4.2; 95%CI=1.9-9.1). Furthermore, belonging to the age group of 30-59 years (OR=5.0; 95%CI=2.0-10), having no education (OR=4.7; 95%CI=1.9-5.5), unemployed (OR=2.5; 95%CI=1.3-5.7), and practicing less fat diet (OR=3.2; 95%CI=1.7-6.0) were significantly related to community health-post attendance in the slum. However, the elderly residents were less likely to visit the health post (OR=0.3; 95%CI=0.1-0.9). Meanwhile, in the middle-income, a significant association was found in increasing age (OR=1.03; 95%CI=1.01-1,05), residents who were practicing regular physical activity (OR=2.3; 95%CI=1.34-4.1), and residents who did not smoke (OR=2.9; 95%CI=1.3-6).

Table 3. Multivariate Analysis of Community Health Post Attendance Associated Factors in Slum and Middle-income Residents

Variables	Community Health Post Attendance					
	Slum Hamlet			Middle-income Hamlet		
	Coeff.	OR (95%CI)	p	Coeff.	OR (95%CI)	p
Women	1.43	4.2(1.9-9.1)	0.00			
Age (numeric)				0.03	1.03(1.01-1.05)	0.01
30-59 y.o	1.62	5.0(2-10)	0.01			
≥60 y.o	-1.21	0.3(0.1-0.9)	0.04			
No education	1.50	4.7(1.9-5.5)	0.04			
Not Working	0.93	2.5(1.3-5.7)	0.00			
Less fat diet	1.16	3.2(1.7-6.0)	0.00			
Not Smoking				1.06	2.9(1.3-6.0)	0.00
Regular physical activity				0.86	2.3(1.3-4.1)	0.02

DISCUSSION

The study population was mostly women. Even though the survey was conducted on the weekend and random selection was conducted; the male residents habitually rejected the interview and handed it over to their wives or mothers. This situation also explains how the respondents' low educational level is more prominent in women and homemakers. This small scholarly figure is not in line with the demographic profile of Jakarta as the capital city of Indonesia, where an estimated 40% of the population are senior high graduates. However, Pejagalan village has a rapid population mobility dominated by domestic migrants and provides cheap monthly housing rent. The immigrants are generally from rural areas, belonging to the age group of 30-40, having low educational backgrounds and possessing no capital when moving in.[11,23] They are shaping the population composition as a less educated community.

People with unhealthy behavior had less likelihood of visiting the health post. In both hamlets, smokers and alcohol drinkers did not attend the post. The findings were supported by the research conducted in Australia, which showed that the people with higher unhealthy

lifestyles scores were more reluctant to do primary care consultation than people who had fewer scores.[24]

The results of the visitors' NCDs conditions underlined the high prevalence of the diseases and the multimorbidity in a slum community. This study showed that the number of people who had multimorbidity was higher in the slum area than in the middle-income stratum. A long-term study by Barnett et al. stated that people with socioeconomic deprivation are more likely to have multimorbidity, including mental illnesses.[25] Moreover, this study found that people with multimorbidity are showing a positive attitude towards community health-post attendance. The findings are congruent with an investigation by Pati et al.[26], which indicates that multimorbidity uncontested experience more flags hence drive the sufferer to seek help.

The multivariate analysis conveyed that the residents in each hamlet have different predictors related to their community health-post attendance. In the slum, women, belonging to the 30-59 age band and having only 6th grade or less educational levels, have more odds of visiting community health posts in their area. In line with several previous studies, the outcomes also show the relevance of gender, in this case, women in the age band of 30-59, assuming that most women in this community are not working and have more flexibility to visit the health post.[22,27,28] The less educated residents in urban poor also follows the premise that they are unemployed and hence, have more time to visit the community health posts.[20] Having a higher education level is a significant factor in the poor urban to be employed. The working population may explain the inverse figure because of the inflexibility of time to visit the health post due to community health posts' limited operation time.

The elderly group in a low-income community shows poor health-seeking behavior, as explained by the studies conducted in the urban slums.[21,29] The reason for not seeking health care was lack of money and right information. The studies also emphasized on the need for low-cost health facilities in urban slums. We presume that the elderly in the slum might believe that community health posts are a paid facility, or since the post does not provide medications, they are reluctant to go.

Residents who practice the less-fat diet reveal a significant association with community health-post's attendance in the slum. The outcome is in line with a study mentioned by Teary and Leary about self-compassion and self-regulation that may enhance people's ability to manage their health-related behavior and deal with medical problems.[30] The association also applied to the middle-income hamlet, where the people, who were practicing regular physical activity, tended to visit community health posts as they were practicing this healthy behavior to monitor their health indicators closely. Meanwhile, smoking was inversely related to the visit, consistent with a study by Feng et al.[24], as unhealthy lifestyle scores link directly to a smaller likelihood to seek health services.

CONCLUSION

This study has proved the association between socioeconomic conditions within the community and health-seeking behavior. This study has also unfolded NCDs' prevalence and distinct predictors in two areas with different socioeconomic backgrounds. Male residents, elderly, working residents, and residents with unhealthy behavior, particularly in the slum area, require a different approach regarding NCDs screening and monitoring. As prevalence and multimorbidity status of NCDs occurred more often in a slum than in the middle-income hamlet, it emphasizes that there is a major need of thorough health assessment in the poor urban community, which is imperative to minimize the adverse impact on their health.

The problem needs to be addressed adequately since rapid urbanization worsens the slum density; we expect the prevalence would rocketing in the coming years. The urban population vulnerability is expected to be worsening in the coming emergence and re-emergence of infectious diseases, such as the Covid-19 pandemic. Enhancing the specific target of NCDs screening respective to the areas will be the best effort in preventing further rising of the NCDs prevalence.

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CONFLICT OF INTEREST AND FUNDING RESOURCES

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