TABLE OF CONTENT

READER MAIL

Dear Editor

I am very interested in the article published in Kesmas: National Public Health Journal Volume 11 Issue 1 August, 2016, entitled "Measles Immunization and Vitamin A for the Prevention of Pneumonia in Indonesia" written by Ratno Widoyo. The high number of toddler's deaths of pneumonia make preventive measure needs to be accomplished. This study showed that measles immunization and vitamin A are as effective as Spn and Hib that can protected children toward pneumonia. I agree this method effective, but the coverage is still lower than the target applied. This could be because some segments of society dubious 'halal form' from the content of the vaccine. This study is expected to provide overview information for both government, health workers and also parents. Also this could be as an evaluative measures to increase measles immunization coverage and vitamin A supplementation for children in Indonesia. **(Dayu, Bogor)**

Kesmas: National Public Health Journal editorial team accepts any criticism, feedback and recommendation related to published articles and for the progress of journal that can be submitted through e-mail: kesmas.phj@gmail.com. Please kindly inform your name, institution name and address. We will publish criticism, feedback and recommendation received on reader mail in the next edition. We will provide an interesting souvenir for the reader whose criticism/feedback/recommendation is published on the reader mail. Thank you. **(Editorial Team)**

AUTHOR GUIDELINES

1. Kesmas: National Public Health Journal published articles in the field of public health that inclides Biostatistics, Epidemiology, Health Policy and Administration, Occupational Health and safety, Environmental Health, Health Education and Promotion, Public Health Nutrition and Sexual and Reproductive Health.

2. Submitted articles must be research articles and invited review articles that should not have been previously published or be currently under consideration for publication anywhere else and free plagiarism. Each submitted article will be checked by Ithenticate, an application for detecting plagiarism.

3. Components of Articles:
   - The title is written both English and Bahasa Indonesia maximum 20 words.
   - The author's identity is written under the title, which includes name, affiliation correspondence address, phone number and e-mail (only for correspondence author)
   - Abstract is written both in English and Bahasa Indonesia maximum 200 words. The abstract should be one paragraph covering problems, objectives, method, result and discussion as well as maximum 5 (five) keywords separated by comma.
   - Introduction contains background, brief and relevant literature review as well as the aim of study.
   - Method includes design, population, sample, data sources, techniques/instruments of data collection and data analysis procedure.
   - Result are research findings and should be dear and concise.
   - Discussion should properly and argumentatively define results of study with any relevant theory and prior finding.
   - Tables should be single-spaced and numbered consecutively in accordance with presentation in the text. Tables and/or figures should be no more than 6 (six) as presented in Result.
   - Conclusion and Recommendation should answer problems of study not exceeding the capacity of finding. Recommendation should refer to the aims and conclusion in form of narration, be logical and effective.

4. References should be prepared using Vancouver styles.
   - Reference number must be numbered consecutively in accordance with the whole text and current journal references are preferred.
   - Write the author's last name and first name initials maximum 6 (six) authors, the remaining should be followed by "et al".
   - The first letter of reference little should be capitalized and remaining should be written in lowercase letters, except name of person, place and time. Latin names should be written in italics. Title should not be underlined and written in bold.
   - Example of references:

   Individual Author Journal Article:
   Zainuddin AA. Kebijakan pengelolaan kualitas udara terkait transportasi di Provinsi DKI Jakarta. Kesmas: National Public Health Journal. 2010; 4 (6): 281-8.

   Journal Article Author Organization:
   Diabetes Prevention Program Research Group. Hypertension, insulin, and proinsulin in participants with impaired glucose tolerance. Hypertension. 2002; 40 (5): 679-86.

Journal Article on the Internet:
Abood S. Quality improvement initiative in nursing homes: the ANA acts in an advisory role. The American Journal of Nursing [serial on the Internet]. 2002 Jun [cited 2002 Aug 12]; 102 (6): [about 3 p.]. Available from:http://www.nursingworld.org/AJN/ 2002/june/Wawatch.htm.

Books Written Individuals:
Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.

Book Written Organization and Publisher:
Royal Adelaide Hospital; University of Adelaide, Department of Clinical Nursing. Compendium of nursing research and practice development, 1999-2000. Adelaide (Australia): Adelaide University; 2001.

Chapter in Books:
Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93-113.

Matter of Low or Regulation
Regulated Health Professions Act, 1991, Stat. Of Ontario, 1991 Ch.18, as amended by 1993, Ch.37: office consolidation. Toronto: Queen's Printer for Ontario; 1994.

CD-ROM:
Anderson SC, Poulsen KB. Anderson's electronic atlas of hematology [CD-ROM]. Philadelphia: Lippincott Williams & Wilkins; 2002.

Books on the Internet:
Foley KM, Gelband H, editors. Improving palliative care for cancer [monograph on the Internet]. Washington: National Academy Press; 2001 [cited 2002 Jul 9]. Available from: http://www.nap.edu/books/0309074029/html/.

Encyclopedia on the Internet:
A.D.A.M. medical encyclopedia [Internet]. Atlanta: A.D.A.M., Inc.; c2005 [cited 2007 Mar 26]. Available from: http://www.nlm.nih.gov/medlineplus/encyclopedia.html.

Website:
Canadian Cancer Society [homepage on the Internet]. Toronto: The Society; 2006 [updated 2006 May 12; cited 2006 Oct 17]. Available from: http://www.cancer.ca/.

5. Manuscript should be typed using word processors (Microsoft Word or Open Office) software. The font used throughout the paper is Times New Roman. The paper size is A4 (i.e., 210 x 297 mm). Then it should be one-column format with all margin 3 cm, double spaced and maximum 5,000 words. Manuscript must be submitted via website http://journal.fkm.ui.ac.id/kesmas. Please include Covering Letter and Statements in a separated document file containing your summary of scientific finding and uploaded on Supplementary Files in PDF Format.

7. Manuscript published is charged a manuscript handling fee amount Rp 500,000,- (five hundred thousand rupiah). Please make a bank transfer payment of charge to FKM UI Bank BNI Kantor Cabang UI Depok Account No. 0067984984, then please send the proof of payment to e-mail: kesmas.phj@gmail.com

Social Determinant of Health of Adult Smoking Behavior: Differences between Urban and Rural Areas in Indonesia

Determinan Sosial Kesehatan Perilaku Merokok pada Orang Dewasa: Perbedaan antara Wilayah Pedesaan dan Perkotaan di Indonesia

Fitri Kurnia Rahim*, Thunwadee Suksaroj**, Isareethika Jayasvasti**

*Institute of Health Science Kuningan (STIKes Kuningan), **ASEAN Institute for Health Development, Mahidol University, Nakhonpatthom, Thailand

Abstract

Tobacco consumption is still a burden for many countries worldwide, due to many causes attributable to smoking. Tobacco use is one of the leading global helath risks for human mortality. Further, it also responses for generating the other health risks relating with chronic diseases. The number of tobacco use has grown gradually in low-and middle-income countries. Indonesia has the highest prevalence of smoking behavior among Southeast Asian countries. This study aimed to determine predictors of smoking behavior between rural and urban areas. Data were taken from The Global Adult Tobacco Survey (GATS). This study used cross-sectional analytical study and multiple logistic regression analysis. Samples were 8,305 Indonesian adults aged ≥ 15 years. The study showed that smokers in rural area were higher than in urban area, respectively 36.8% and 31.9%. Significant predictors of smoking behavior in rural and urban areas were occupation, sex, education level, economic status as well as smoking rule inside home. In urban area, age was also significant predictor, and otherwise in rural area. The strongest predictor was smoking rule inside home and sex for smoking behavior, either in rural or in urban area.
Keywords: Adult, Indonesia, smoking, social determinant of health, tobacco

Abstrak

Konsumsi tembakau masih menjadi beban bagi banyak negara di seluruh dunia, karena banyak penyebab disebabkan oleh rokok. Penggunaan tembakau merupakan salah satu risiko bagi kesehatan global yang dapat menyebabkan kematian manusia. Selanjutnya, hal ini juga dapat berakibat terhadap risiko kesehatan lain yang berkaitan dengan penyakit kronis. Jumlah penggunaan tembakau telah berkembang secara bertahapdi negera-negara rendah dan menengah. Indonesia memiliki prevalensi perilaku merokok tertinggi di antara negara-negara di Asia Tenggara. Penelitian ini bertujuan untuk mengetahui prediktor terhadap perilaku merokok antara wilayah pedesaan dan perkotaan. Data diambil dari *Global Adult Tobacco Survey.* Penelitian menggunakan studi analitik potong lintang dan analisis regresi logistik ganda. Sampel berjumlah 8.305 orang dewasa Indonesia berusia ≥ 15 tahun. Penelitian menunjukkan bahwa perokok di wilayah pedesaan lebih tinggi dibandingkan di wilayah perkotaan, masing-masing 36,8% dan 31,9%. Prediktor signifikan terhadap perilaku merokok di wilayah pedesaan dan perkotaan adalah pekerjaan, jenis kelamin, tingkat pendidikan, status ekonomi serta aturan merokok di dalam rumah. Di wilayah perkotaan, usia juga merupakan prediktor yang signifikan dan sebaliknya di wilayah pedesaan. Prediktor terkuat adalah aturan merokok di dalam rumah dan jenis kelamin untuk perilaku merokok di wilayah pedesaan atau perkotaan.
Kata kunci: Dewasa, Indonesia, merokok, determinan sosial kesehatan, tembakau

Introduction

Since tobacco use remains a health problem in many countries, World Health Organization (WHO) forecasts that tobacco use would kill almost eight million people annually by 2030.[1,2] The increasing of death caused by tobacco use occurs in developing countries. Moreover, many diseases are attributable to tobacco use. Smoking cigarette is one of common products consumed by people worldwide.[3]

Among Southeast Asian countries, Indonesia has the highest adult smoking prevalence.[4] Indonesia's smoking prevalence is still high on adult population.[5] During the age, adults are normally at productive time. Sometimes, tobacco use might decrease productivity of people. Also, it has become the major contributor for country's morbidity and mortality.[5] However, government's willingness for regulation implementation of tobacco control program is low. Framework convention on tobacco control has not been ratified by Indonesian government; otherwise, other Southeast Asian countries did it already.[6,7] That is why the high prevalence of smoking occurs in Indonesia. As Indonesia has many islands, it may arise gap between rural and urban areas. Nevertheless, in term of smoking behavior, residence place gap of smoking behavior may be different between rural and urban areas. Prior study found that predictors for smoking behavior between rural and urban areas were different. Rural area had higher smoking prevalence than urban. This study examined predictors of smoking by different residence place.

Method

This study used The Global Adult Tobacco Survey (GATS) in 2011. The GATS concerned on a nationally representative household survey among adult aged $\geq$ 15 years old, with an overall response rate of 94.3%.[8] The data collection procedure was face-to-face personal interview. Handheld devices were used for electronic data collection. Cross-sectional analytical study estimated for the country as a whole, as well as by urban city, either rural or urban residence had been shown in this study. The survey used sampling frame from Census Blocks which is obtained from the population census of Indonesia Central Statistics Agency (*Badan Pusat Statistik*) in May 2010. Stratified four cluster sampling was applied in this study. As many as 8,305 samples were involved.[8]

The standardized questionnaires of global tobacco by using optional question were applied for measurement.[8] From this measurement, smoking behavior was assigned as dependent variable which divided two categories of smokers. Daily and non-daily smokers of any cigarette product was coded as 0, while non-smokers both former and never be smoker was coded as 1. Independent variables were sociodemographic and smoking rule inside home. The variables related to social demographic used in this analysis were sex (male/female), age, occupation, residence place (urban/rural), education, economic status (poor/middle/rich), and number of person living in one household.

In this study, occupation consisted of four categories that were civil servant/non-government employee was coded as 0; self-employed/subsistence farming/home maker was coded as 1; student was coded as 2; and unemployed (able/unable to work/retired) was coded as 3. For education level, it had three categories that were college/university completed – postgraduate degree completed was coded as 0; secondary school completed – high school completed was coded as 1; less than primary school completed – primary school completed was coded as 2. Moreover, for smoking rule inside home, this study categorized the tolerance of smoking rule use into three categories that were yes tolerance if the answer was allowed and no rule which was coded as 0; partial tolerance if the answer was not allowed but exceptions which was coded as 1; and no tolerance if the answer was never allowed which was coded as 2.

All adult data were used for this analysis. Residence place of respondents was being considered for each test analysis. The estimates for prevalence were reported as by percentage or composition with 95% confidence intervals (CI). Chi square test was used to examine relations between smoking behavior and sociodemographic as well as smoking rule inside home variables. A p value < 0.05 was considered statistically significant. Multivariate logistic regression was applied to determine predictor of smoking behavior. All statistical analysis was using SPSS 18.0 software.

Results

Smoking Behavior

Table 1 showed residence place differences in sociodemographic and smoking behavior prevalence. According to characteristic of composition, as compared to urban area, rural area showed a slightly higher proportion of smoker. Totally, the proportion of smokers in rural was about 1.2 times higher than urban area, 0.368 and 0.319 respectively. In comparison with urban composition, rural was higher proportion in age $\geq$ 45 years, self-employee/subsistence farming/home maker of occupation group, female, less than primary school completed, middle economic status, four and less than number of person living, and tolerance tobacco use inside home in term of smoking rule. The proportion of smoker in 25 – 44 years of age category was higher in urban than rural. In term of occupation, urban had higher smoker proportion, except among those working as self-employee/subsistence farming/home maker. On sex characteristic, smoker in rural was much higher than urban. For other variables, among those who had high school completed and lower, rich economic status, no and partial tolerance of tobacco use insider had higher proportion in urban than rural areas.

Table 1. Description and Pattern of Current Smoking among Adults in Indonesia by Residence Places

Variable	Category	Composition (%)			Current Smoking (%)		
		Rural	**Urban**	**Difference**	**Rural**	**Urban**	**Difference**
Smoking behavior	Non-smoker	0.632	0.681	-0.049	-	-	-
	Smoker	0.368	0.319	0.049	-	-	-
Age					< 0.001	< 0.001	
	15 – 24 years	0.142	0.179	0.040	0.040	0.040	0
	25 – 44 years	0.421	0.501	0.166	0.166	0.171	-0.005
	≥ 45 years	0.401	0.320	0.162	0.162	0.108	0.054
Occupation/work status					< 0.001	< 0.001	
	Civil servant/non-government employee	0.218	0.347	0.107	0.107	0.154	-0.047
	Self - employee/subsistence farming/home maker	0.669	0.501	0.236	0.236	0.125	0.111
	Student	0.042	0.073	0.007	0.007	0.010	-0.003
	Unemployed/retired	0.070	0.078	0.019	0.019	0.028	-0.009
Sex					< 0.001	< 0.001	
	Female	0.530	0.519	0.020	0.020	0.012	0.008
	Male	0.470	0.481	0.368	0.386	0.306	0.062
Education level					<0.003	0.018	
	College/university - postgraduate degree completed	0.033	0.106	0.256	0.008	0.028	-0.02
	Secondary - high school completed	0.292	0.507	0.104	0.104	0.160	-0.056
	Less than primary school completed - primary school completed	0.675	0.386	0.008	0.256	0.131	0.125
Economic status				0.024	0.003		
	Rich	0.120	0.196	0.043	0.043	0.053	-0.01
	Middle	0.488	0.521	0.190	0.190	0.175	0.015
	Poor	0.392	0.283	0.135	0.135	0.091	0.044
Person living member					0.937	0.782	
	≤ 4	0.741	0.703	0.273	0.273	0.225	0.048
	> 4	0.259	0.297	0.095	0.095	0.094	0.001
Smoking rule					< 0.001	< 0.001	
	No tolerance	0.025	0.153	0.004	0.004	0.025	-0.021
	Partial tolerance	0.121	0.196	0.030	0.030	0.053	-0.023
	Tolerance	0.849	0.638	0.369	0.369	0.241	0.128

Predictors of Smoking Behavior

Table 2 showed the adjusted odds ratio (AOR) of smoking in rural and urban areas regarding to multivariate logistic regressions analysis. In rural, aging did not significantly related with smoking. Student (AOR: 0.632; 95% CI: 0.238-0.550) and unemployed (able or unable) and retired (AOR: 0.163; 95% CI: 0.093-0.285) of occupation groups were a significant predictor of smoking. Those groups were less likely to smoke than those working as civil servants and non-government employees. Sex was also a significant predictor of smoking. Males were more likely to smoke than females (AOR: 97.003; 95% CI: 74.689-125.984). Hence, secondary-high school completed groups (AOR: 2.303; 95% CI: 1.355-3.912) and primary school completed and lower (AOR: 3.336; 95% CI: 1.983-5.610) were positively a predictor of smoking. Those groups were more likely to smoke than the high level of education. In addition, poor economic also significantly related to smoking (AOR: 1.573; 95% CI: 1.112-2.123), but negatively on middle economic status. Poor condition among rural population was more likely to smoke. In term of smoking rule, full tolerance of tobacco use inside home was significant predictor (AOR:

4.364; 95% CI: 2.212-8.608), but negatively for partial tolerance. Adult who had full tolerance of tobacco use inside home was more likely to smoke.

Unlike urban, aging did not significantly related in the old age period ≥ 45 years old, but negatively in the middle age group of 25 – 44 years. Specially, compared to age groups of 15 – 24 years old, those age groups of 25 – 44 years were 1.4 times more likely to smoke (AOR: 1.432; 95% CI: 1.035-1.982). Hence, the same pattern with rural area, secondary-high school completed groups (AOR: 0.228; 95% CI: 0.144-0.361) and primary school completed and lower (AOR: 0.656; 95% CI: 0.460-0.935) was positively a predictor of smoking behavior. Those levels of education groups were more likely to smoke than the high level of education. Similar with rural, males were likelihood to smoke compared to female (AOR: 109.924; 95% CI: 79.499-151.994). In addition, poor economic significantly related to smoking (AOR: 1.513; 95% CI: 1.113-2.056), but negatively on middle economic status. Poor condition among urban population was more likely to smoke. Unlike in rural, fully (AOR: 3.692; 95% CI: 2.774 - 4.913) and partial tolerance (AOR: 1.903; 95% CI: 1.374-2.636) of tobacco use in-

Table 2. Predictors of Current Smoking among Adults in Indonesia by Residence Place

Variable	Category	Rural (n=4203)			Urban (n=4102)		
		AOR	95 % CI	p value	AOR	95 % CI	p value
Age	15 – 24 years	1			1		
	25 – 44 years	1.170	0.829-1.654	0.372	1.432	1.035-1.982	0.030
	≥ 45 years	1.412	0.987-2.020	0.059	1.211	0.858-1.709	0.276
Occupation/work status	Civil servant/non-government employee	1			1		
	Self - employee/subsistence farming/home maker	0.871	0.685-1.106	0.871	1.002	0.800-1.255	0.986
	Student	0.163	0.093-0.285	<0.001	0.228	0.144-0.361	<0.001
	Unemployed/retired	0.362	0.238-0.550	<0.001	0.656	0.460-0.935	0.020
Sex	Female	1			1		
	Male	97.003	74.689-125.984	<0.001	109.924	79.499-151.994	<0.001
Education level	College/university - postgraduate degree completed	1			1		
	Secondary - high school completed	2.303	1.355-3.912	0.002	1.533	1.125-2.089	0.007
	Less than primary school completed - primary school completed	3.336	1.983-5.610	<0.001	2.441	1.715-3.473	<0.001
Economic status	Rich	1			1		
	Middle	1.291	0.955-1.746	0.097	1.103	0.858-1.417	0.446
	Poor	1.573	1.112-2.123	0.009	1.513	1.113-2.056	0.008
Smoking rule	No tolerance	1			1		
	Partial tolerance	1.463	0.709-3.016	0.303	1.903	1.374-2.636	< 0.001
	Tolerance	4.364	2.212-8.608	<0.001	3.692	2.774-4.913	< 0.001

side home were significant predictors of smoking behavior. Both those whod had full and partial tolerance of tobacco use were more likely to smoke than those who had no tolerance of tobacco use inside home.

Discussion

Study findings indicated that current smoking prevalence was slightly the same between rural and urban areas, 36.8% and 31.9% respectively. Small number was found for the prevalence of differences of smoking in accordance with residence place. However, rural area had higher proportion of smoking than urban areas. This trend had the same pattern with prior national study.[9-11] Studies in Bangladesh and China found the same as current finding that rural had higher tobacco smoking than urban.[12,13] Basic Health Research (*Riset Kesehatan Dasar*) from 2007-2010 depicted that rural had higher smoker than urban area.[9-11] As well as the increasing number of smoking prevalence occurred during that year both in rural and urban areas. This study presented that smoking among rural area, however, was approximately 1.01 fold lower than the national survey rate in 2010. As well as the difference of smoker in both areas was 5% as reported by Basic Health Research in 2010.[10] Recently, Indonesia faces smoking problem, which was the same problem in both rural and urban areas in Indonesia. Attention should be given to develop an intervention program in both areas. Framework Convention on Tobacco Control (FCTC) is an agreement that has already been effective in tobacco control program among international community, however, Indonesia has not yet ratified.[14]

The aim of current study was to provide the predic-

tors of adult smoking behavior by residence place differences both in rural and urban areas. According to the results obtained here, the predictors between rural and urban were different. For rural area, occupation, sex, education level, economic status, and tolerance of tobacco use inside home were significant predictors.

Similarly, the significant predictors of smoking behavior were the same as in rural predictors, however, adding more one significant predictor that was age variable. Among urban area, people at the age group of 25 – 44 years were more likely to smoke. In addition, the high prevalence of urban smoker was the highest in that period of age group (50.1%). It was shown also in Bangladesh finding that the increasing proportion of smoker was from the age of 25-54 years.[1] Similar to another finding, among adult men in Pakistan, age was significant predictor for current cigarette smoking. It showed that the older people the more likely to smoke.[15] The decreasing of smoker in the older age might be due to several reasons, one of which was the occurrence of severe diseases faced by that group, which means that they needed to quit smoking or they were died already. The early age group of adult should be concerned in order to be target population of tobacco control program. This might boost the productivity of adult population in their working activities. Moreover, adult population might be imitated by the young generation, which means that while they were being parents, their children might follow their behaviors. One finding explained that parental smoking related to a higher risk of lifetime experimental smoking among urban men.[13]

In addition, sex factor has been found as significant

predictors to smoking behavior either rural or urban areas. As males are more likely to smoke than females, it will be implications to economic stability of every household. It is because tobacco consumption exhibits a myopic addiction, meaning that the smoker is irrational behavior.[16] Then the demand of cigarette for smoker would be increased in the future.

In term of smoking rule inside home, the current study showed that in rural, those who had full tolerance of smoking inside home were significantly a predictor of smoking behavior, while in urban, the significant predictors were partial and full tolerance of smoking inside home. In other words, the more population did not have the smoking rule inside home (allow smoking inside home), it might raise the chance for people to smoke. Developing smoke-free homes for both areas of residence was very important. By building smoke-free home regulation, it is not only trying in reduction of smoking, but also will protect the whole household members from second hand smoke exposure.[17]

Conclusion

This study provides important information in identifying the differences pattern between rural and urban areas, in explaining about the most influential factors of smoking behavior among adults. Smoker in rural area were higher than in urban area, 36.8% and 31.9 respectively. Occupation, sex, educational level, economic status as well as smoking rule inside home factors were found to be significantly associated with cigarette smoking behavior. The finding showed that age factor and smoking behavior in rural area appears to be significantly associated, particularly among age ≥ 45 years old, otherwise, in urban area is among age 25-44 years old. Moreover, those particular ages require a comprehensive prevention program. In addition, sex and tolerance of tobacco use inside home have been found as the strongest predictors of smoking behavior among Indonesian adults either in rural or urban areas.

Recommendation

This study recommends developing smoke-free home regulation and increasing the tobacco control program according to target population approaches. Due to a little different pattern of smoking rule predictors between rural and urban areas, urban area has to show more effort for implementing the complete smoking regulation in term of smoking bans inside home. In addition, tobacco control program should be relatively increased by considering the appropriate target population both in rural and urban areas. Particuraly, the middle age of adult population should be given attention for tobacco control program. Moreover, sex perspective also should be involved in tobacco control program. As males are more

likely to smoke than females.

References

1. World Health Organization. WHO report on the global tobacco epidemic. Raising taxes on tobacco. Geneva, Switzerland: World Health Organization; 2015 [cited Aug 15 2016]. Available from: www.who.int.
2. World Health Organization. WHO report on the global tobacco epidemic. The MPOWER package. Geneva: Switzerland; 2008 [cited January 4 2016]. Available from: http://apps.who.int/iris/bitstream/10665/43818/1/9789241596282_eng.pdf.
3. Eriksen M, Mackay J, Schluger N, Gomeshtapeh FI, Drope J. The tobacco atlas. 5th edition. Brighton: The American Cancer Society; 2015.
4. Lian TY, Dorotheo U. The ASEAN tobacco control atlas. 2nd edition. Bangkok, Thailand: South East Asia Tobacco Control Alliance; 2014.
5. Eriksen M, Mackay J, Schluger N, Gomeshtapeh FI, Drope J. The tobacco atlas Indonesia. Factsheet, 2015 [cited January 2016]. Available from: http://www.tobaccoatlas.org/country-data/indonesia/.
6. McDonald P, Utomo ID, Utomo A, Reimondos A, Hull T. The 2010 greater Jakarta transition to adulthood survey policy brief No. 3 early childhood education and care for disadvantaged families. Canberra: Australian National University; 2011.
7. World Health Organization. WHO Report on the global tobacco epidemic [Facsheet]. 2015[cited October 20, 2015]. Available from: http://www.who.int/tobacco/surveillance/policy/country_profile/idn.pdf?ua=1.
8. World Health Organization. Global adult tobacco survey: indonesia report 2011. Jakarta: National Institute of Health Research and Development Ministry of Health; 2011.
9. Kementerian Kesehatan Republik Indonesia. Laporan Riset Kesehatan Dasar 2007. Jakarta: Pusat Penelitan dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia; 2007.
10. Kementerian Kesehatan Republik Indonesia. Laporan Riset Kesehatan Dasar 2010. Jakarta: Pusat Penelitan dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia; 2010.
11. Kementerian Kesehatan Republik Indonesia. Laporan Riset Kesehatan Dasar 2013. Jakarta: Pusat Penelitan dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia; 2013.
12. Palipudi KM, Sinha DN, Choudhury S, Zaman MM, Asma S, Andes L, et al. Predictors of tobacco smoking and smokeless tobacco use among adults in Bangladesh. Indian Journal of Cancer. 2012;49 (4): 387-92.
13. Ma H, Unger JB, Chou C-P, Sun P, Palmer PH, Zhou Y, et al. Risk factors for adolescent smoking in urban and rural China: findings from the China seven cities study. Addictive Behaviors. 2008; 33(8): 1081-5.
14. Achadi A. Regulasi pengendalian masalah rokok di Indonesia. Kesmas: Jurnal Kesehatan Masyarakat Nasional. 2008; 2(4): 161-5.
15. Gilani SI, Leon DA. Prevalence and sociodemographic determinants of tobacco use among adults in Pakistan: findings of a nationwide survey conducted in 2012. Population Health Metrics. 2013; 11 (1): 16.
16. Hidayat B, Thabrany H. Model spesifikasi dinamis permintaan rokok: rasionalkah perokok Indonesia?. Kesmas: Jurnal Kesehatan Masyarakat Nasional. 2008; 3 (3): 99-108.
17. Nichter M, Padmajam S, Nichter M, Sairu P, Aswathy S, Mini GK, et al. Developing a smoke free homes initiative in Kerala, India. BMC Public Health. 2015;15 (1): 480.

Effectivity of Foot Care Education Program in Improving Knowledge, Self-Efficacy and Foot Care Behavior among Diabetes Mellitus Patients in Banjarbaru, Indonesia

Efektivitas Program Pendidikan Perawatan Kaki dalam Meningkatkan Pengetahuan, Efikasi Diri dan Perilaku Perawatan Kaki Pasien Diabetes Melitus di Banjarbaru, Indonesia

Mahdalena, Endang Sri Purwanti Ningsih

Banjarmasin Health Polytechnic Ministry of Health, Banjarmasin, Indonesia

Abstract

Diabetic foot problem in Indonesia remains a big problem and still needs an optimum concern. Foot care education is one of efforts that must be performed to prevent foot problem among diabetes mellitus patients. This study aimed to analyze effectivity of foot care education program in improving knowledge, self-efficacy and foot care behavior of diabetes patients in Banjarbaru. This study was quasi experimental with prepost test as conducted at primary health care in Banjarbaru in 2013. Foot care education program was provided to intervention group. Samples were 48 patients (32 persons in intervension group and 16 persons in control group) using purposive sampling technique. Variables measured were knowledge, self-efficacy and foot care behavior of diabetes mellitus patients. Intervention provided on respondents was in form of health education concerning foot care for twice. Every variable was measured twice before and after intervension. Knowledge test was measured using Diabetic Foot Care Knowledge Questionnaire, self-efficacy was measured by using Foot Care Confident Scale Self-Efficacy and foot care behavior was assessed using Behavior Foot Care Questionnaire. Data analysis used Manova. Results showed significant differences on knowledge level (p value = 0.001), self-efficacy (p value = 0.000) and foot care behavior (p value = 0.000) before and after intervention.
Keywords: Education, foot care, self-efficacy

Abstrak

Masalah kaki diabetik di Indonesia masih merupakan masalah besar dan masih memerlukan perhatian yang optimal. Edukasi perawatan kaki adalah salah satu upaya yang harus dilakukan dalam mencegah masalah kaki untuk pasien diabetes melitus. Penelitian ini bertujuan untuk menganalisis efektivitas program pendidikan perawatan kaki dalam meningkatkan pengetahuan, efikasi diri, dan perilaku perawatan kaki pasien diabetes di wilayah Banjarbaru. Jenis penelitian yang digunakan adalah *quasi experimental* dengan *prepost test*, dilakukan di puskesmas wilayah Banjarbaru tahun 2013. Kelompok intervensi diberikan program pendidikan perawatan kaki. Sampel berjumlah 48 pasien (32 orang kelompok intervensi dan 16 orang kelompok kontrol) menggunakan teknik *purposive sampling*. Variabel yang diukur adalah pengetahuan, efikasi diri, dan perilaku perawatan kaki pasien diabetes melitus. Perlakuan yang diberikan pada responden berupa pendidikan kesehatan tentang perawatan kaki sebanyak dua kali. Setiap variabel diukur dua kali sebelum dan setelah intervensi. Uji pengetahuan diukur menggunakan *Diabetic Foot Care Knowledge Questionnaire*, efikasi diri diukur menggunakan *Foot Care Confident Scale Self-Efficacy*, dan perilaku perawatan kaki dinilai menggunakan *Behavior Foot Care Questionnaire.* Analisis data menggunakan Manova. Hasil penelitian menunjukkan perbedaan yang signifikan pada tingkat pengetahuan (nilai p = 0,001), efikasi diri (nilai p = 0,000) dan perilaku perawatan kaki (nilai p = 0,000) sebelum dan setelah intervensi.
Kata kunci: Pendidikan, perawatan kaki, efikasi diri

Introduction

Several serious complications can be suffered by patients of diabetes mellitus, such as kidney failure or blindness, yet the biggest complication is complication related to foot. Of average of mortality rate within five years after suffering from diabetic foot, 43-74% get foot amputation as this condition related to bad habit, bad management of diabetes, and lack of preventive actions.[1]

In Indonesia, diabetic foot problem remains a big problem and still needs an optimum concern. Most of treatment of diabetes mellitus patients is always due to diabetic foot. Data of Cipto Mangunkusumo Public Hospital in 2007 showed that of 327 diabetes mellitus patients hospitalized at internal disease treatment room, 111 patients were diagnozed with diabetic foot ulcers. Based on such data, the most often etiology were neuropathy (62.5%) and peripheral artery disease (16.7%). Moreover, extrinsic factors that take a role in diabetic foot pethogenesis are trauma (65.2%), shoes (21.7%), etc (13%). Output of diabetic foot patients are amputation (35%), death (15%) and get recovered with deformities (50%). Condition of diabetes mellitus patients after amputation is still very bad and died in three years after amputation (14.3%).[2]

Foot ulcer suffered by diabetes mellitus patients does not only affect on physical changes of the sufferers, but also affect their daily life.[3] In literature study concerning quality of life of diabetes mellitus patients with foot ulcer, several studies both qualitative and quantitative say that foot ulcer suffered by diabetes mellitus patients gives negative effects to their life, which are the decreasing physical function, psychological status and social status.

Health policies in Indonesia nowadays more put forward on independence of Indonesian people in managing their health, so any health programs today is more increasing in terms of promoting and preventive actions. As well as in solving any diabetic foot problems in Indonesia, several strategies are needed to solve the problem including preventive actions, cooperations of any diciplines in the execution, monitoring and education for diabetes mellitus patients by health professionals. Foot care is one of actions that should be conducted to prevent foot problem especially for diabetes mellitus patients. Empowerment of diabetes mellitus patients in conducting foot care independently is something that should be performed by nurses. Comprehensive approach integrating patient education and preventive foot care may decrease frequency and morbidity of diabetic foot lesion threat.[4]

Several studies showed effectivity of foot care education to cognitive and behavioral changes as well as decrease of foot disorder incidence such as ulcer through patient education in forms of lecture, workshop, skill exercise, modification programs and followup by phone.[5]

In Banjarbaru City region, South Kalimantan Province, there were data that diabetes mellitus sufferers in 2013 were as many as 1,960. Then the number of sufferers increased in 2014 ranked at 14th place as the largest case of disease in Banjarbaru City with 3,483 sufferers (Banjarbaru Health Agency).

Based on prior study conducted at Sungai Besar Primary Health Care, Banjarbaru, on 10 diabetes mellitus patients undergoing outpatient, 7 patients stated that they did not do foot care including foot checkup, washing, the use of lotion and nail care. Two persons did not maintain foot hygiene, 10 persons said that they never received education/counseling concerning foot care. Based on observation, several primary health care in Banjarbaru City were not yet to perform educational actions concerning foot care, and checking up diabetes mellitus patients' foot condition was still not yet a regular activity while physical checkup. Primary health care is the leading health care center, so if diabetes mellitus foot care educational actions can be well performed, the decrease of referral number of diabetes mellitus sufferers to hospitals due to diabetic foot complications may occur.

This study aimed to analyze effectivity of foot care education programs in improving knowledge, self-efficacy and behavior of diabetes mellitus patients in diabetic foot care at primary health care in Banjarbaru region.

Method

This study used quasi experimental prepost test with control group as conducted on two groups of study, namely intervention group and control group. This study aimed to analyze effectivity of foot care education programs in improving knowledge, self-efficacy and behavior of diabetes mellitus patients in diabetic foot care at primary health care in Banjarbaru region, with hypothesis that foot care education programs could improve knowledge, self-efficacy and behavior of diabetes mellitus patients in foot care.

Subjects of study were all diabetes mellitus patients at primary health care in Banjarbaru region including Banjarbaru, Cempaka, Sungai Besar Primary Health Care. Samples were all diabetes mellitus patients at Banjarbaru Primary Health Care that met criteria as many as 48 respondents consisting of 32 respondents in the intervension group as 22 persons were taken from Cempaka Primary Health Care and 10 persons were taken from Banjarbaru Primary Health Care. Meanwhile, there were 16 respondents in the control group consisting of 10 persons taken from Cempaka Primary Health Care and 6 persons taken from Sungai Besar Primary Health Care.

Samples were taken by purposive sampling technique with inclusion criteria including diabetes mellitus type II patients aged < 60 years, having reading and writing

abilities, not having visual problem (diabetic retinopathy according to eye doctor), physically and mentally able to participate, never get amputated, never have diabetic ulcer records before and today (degree 0/in accordance with Wagner's classification).

Independent variables in this study were foot care education program as conducted within three weeks (in three education sessions). Each education session was performed within 60 minutes using peer group. Dependent variables were knowledge, self-efficacy and foot care behavior. Knowledge was measured by questionnaire consisting of 11 questions adopted from Diabetic Foot Care Knowledge Questionnaire (DFCKQ).[6] Maximum score for knowledge test was 11. Questionnaire to self-efficacy consisted of 12 questions adopted from Foot Care Confident Scale Self-Efficacy (FCSS).[7] Maximum score for self-efficacy was 12. Test consisting of 12 questions from Behavior Foot Care Questionnaire was used toward variable foot care behavior.[8] Total score for foot care behavior was 48. Data analysis was conducted by assessing pretest and posttest for variable knowledge, self-efficacy and foot care behavior as analyzed using Kruskal-Wallis test. All variables were simultaneously analyzed in multivariate with Manova test.

Results

Some respondents were women, aged > 58 years, elementary school education level, employed status and suffering diabetes mellitus < 5 years. The complete results could be seen in Table 1. Educators of diabetes conducted counseling in three locations of study, namely Cempaka, Banjarbaru and Sungai Besar Primary Health Care. Health counseling/education was performed in three education sessions. Counseling was performed with peer group consisting of 10 – 15 persons. Each session took place approximately 60 minutes using lecture and simulation methods.

Respondents' knowledge of foot care was stated in form of increase of knowledge score (pre-posttest) on intervension group as many as 23 (71.83%). Self-efficacy of respondents was stated in form of increase of self-efficacy score on the intervention group as many as 28 (87.5%). Foot care behavior score (pre-posttest) on the intervention group was 25 (78.12%) (Table 2).

Discussion

Knowledge of foot care for diabetes mellitus patients is basis in managing their foot as preventive action of diabetic foot complications. Clients's ability in understanding a disease is a basis to know principles in term of prevention/care. diabetes mellitus patients' knowledge of foot care can be increased by providing health education.[8]

Based on results of this study, on the intervention group before foot care education program provided, most respondents (71.9%) already had category of good level of knowledge, yet most in the control group still had low level of knowledge (56.3%). Most of respondents' education background in both groups had elementary school education level. However, a person's knowledge level was not only obtained through education level, but it could be obtained through experience, seeing from diabetic foot sufferers or based on information got from mass media.[9]

Study above also showed that the less knowledge of foot care in the control group certainly would result the lack of understanding the necessity of efforts/actions in care, which could affect the less respondents' awareness of preventive action of diabetic foot complications. Increase of foot care knowledge is very needed by diabetes mellitus patients to prevent the incidence of diabetic foot complications.

Table 1. Distribution of Respondents Based on Age, Sex, Work, Period of Suffering from Diabetes Mellitus

Characteristics	Category	Group		Total	%
		Intervension	Control		
Age	< 50 years old	15	5	20	41.6
	≥ 50 years old	17	11	28	58.4
Sex	Male	12	9	21	43.8
	Female	20	7	27	56.2
Education	Uneducated	1	3	4	8.3
	Elementary school	17	12	5	35.4
	Junior high school	5	2	7	14.6
	Senior high school	7	2	9	18.8
	Higher education	7	4	11	22.9
Work	Employed	22	8	30	62.5
	Unemployed	10	8	18	37.5
Period of suffering from DM	< 1 years	5	8	13	27.1
	1 – 5 years	18	2	20	41.7
	6– 10 years	6	4	10	20.8
	> 10 years	3	2	5	10.4

Table 2. Increase of Knowledge, Self-Efficacy and Foot Care Behavior on the Control Group and Evaluation

Group	Knowledge Level	Increase of Knowledge Score		p Value	Improvement of Self Efficacy		p Value	Improvement of Foot Care Behavior		p Value
		f	%		f	%		f	%	
Intervension group	Decreasing	6	18.38	0.001	2	6.25	0.000	4	12.5	0.000
(n = 32)	Constant	3	9.76		2	6.25		3	9.76	
	Increasing	23	71.87		28	87.5		25	78.12	
Control group	Decreasing	6	37.5		9	56.25		11	68.75	
(n = 16)	Constant	6	37.5		3	18.75		2	12.5	
	Increasing	4	25		4	25		3	18.75	

[a] test with Manova

Results of this study confirmed any significant difference toward knowledge level on the intervention group after the provision of foot care education compared to the control group. According to the result, foot care education program was significantly effective in increasing knowledge of foot care among diabetes mellitus patients. Result of this study was supported by several findings stating that education intervention effectively could increase knowledge and foot care behavior.[10-12]

Based on results, effective foot care education program could significantly increase score of self-efficacy. This study was similar to study that conducted experiment study to patients of cardiovascular disease, which resulted that double increase of self-efficacy occurred on the intervention group after cardiac diet education provided.[11] Another study was also conducted on 138 diabetes mellitus patients in Zahedan, Iran in which the study resulted that effective self-efficacy training improved knowledge, attitude and behavior of self-care which also affected to values of HBA1c and fasting blood glucose.[13]

Improvement of health behavior to a positive was the final aim of an education program or health education by officers. Good foot care behavior effectively could prevent the incidence of diabetic foot complications. Results of study conducted to 396 diabetes mellitus type II patients stated that foot care intervention thorugh education program was proven statistically able to reduce risk of incidence of foot problems among diabetes patients, such as foot lesions, ulcers, whereabouts of mushroom growth, ingrown nail and foot deformities on the intervension group compared to the control group.[14]

Improvement of foot care behavior in the intervension group could be due to any increase of knowledge and self-efficacy scores after intervention of foot care education was performed. Self-efficacy influences relation between self-ability in doing activities and self-management.[15] The rise of good foot care behavior was based on willingness, attitude and high motivation as well as adequate knowledge, therefore patients were expected to be able to perform actions of footcare in their daily life at home. Results of this study was in line with study conducted to 63 diabetes mellitus patients at Arifin Achmad Public Hospital in Pekanbaru, Riau which said that there was a positive relation between knowledge (p value = 0.00) and attitude (p value = 0.03) with diabetic foot care behavior.[15] Knowledge was one of factors that support in daily self-care because by adequate knowledge, a person would understand his/her ill condition and hopefully be able to manage himself/herself to always have healthy lifestyle, so blood glucose was controlled. Similar study was also conducted by Perrin, Swerissen and Payne to 96 diabetes mellitus patients suffering from peripheral neuropathy, which stated that there was a positive relation between foot care self-efficacy beliefs and actual foot care behavior.[16]

Conclusion

There is a significant difference between scores of knowledge, self-efficacy and diabetes mellitus patients' behavior before and after following foot care education program.

Recommendation

Nurses at primary health care should provide foot care education periodically to diabetes mellitus patients. Patients should always care of their foot to avoid diabetic ulcers.

References

1. Robbins JM, Strauss G, Aron D, Long J, Kuba J, Kaplan Y. Mortality rates and diabetic foot ulcers: is it time to communicate mortality risk to patients with diabetic foot ulceration?. Journal of American Podiatric Medical Association. 2008; 98 (6): 489-94.

2. Perkumoulan Endrokinologi Indonesia. Modul pelatihan penatalaksanaan kaki diabetik bagi dokter spesialis penyakit dalam. Jakarta: Perkeni; 2009.

3. Goodridge D, Trepman E, Embil JD, Daughty D. Health-related quality of life in diabetik patients with foot ulcers: literature review. Journal of Wound, OStomy, and Continence Nursing. 2005; 32(6): 368-77.

4. Frykberg RG, Zgonis T, Armstrong DG, Driver VR, Giurini JM, Kravitz SR, et al. Diabetic foot disorder: a clinical practice guideline. The

Journal of Foot & Ankle Surgery. 2006; 45(5): 2 -3.

5. Singh N, Armstrong DG, Lipsky BA. Preventive foot ulcer in patients with diabetes. The Journal of American Medical Association. 2005 [cited 12 Aug 2008]; 293 (2): 217-28. Available from: http://jama.ama-assn.org/cgi/content/full/293/2/217.

6. Pollock RD, Unwin NC, Connoly V. Knowledge and practice of foot car in people with diabetes. Diabetes Research and Clinical Practice. 2004; 64: 117-22.

7. Sloan H. Developing and testing of the foot care confident scale. Jurnal of Nursing Measurement. 2002; 10: 207-18.

8. Vileikyte L, Gonzales J, Leventhal H, Peyrot M, Rubin R, Garoww A, et al. Patient interpretation of neuropathy (PIN) questioner: an instrument for assessment of cognitive and emotional factor associated foot self care. Diabetes Care. 2006; 29(12): 2617-24.

9. Bastabel S. Prinsip-prinsip pengajaran dan pembelajaran. Jakarta: EGC; 2002.

10. Corbett CF. A randomised pilot study of improving foot care in home health patients with diabetes. Diabetes Educator. 2003; 29: 273-82.

11. Valk GD, Kreigsman DMW, Assendelf WJJ. Patient education for pre-venting diabetic foot ulceration. Cochrane Database of Systemic Reviews. 2005; 25 (1): 1-43.

12. Vatankhah N, Khamseh ME, Naudeh YJ, Aghili R, Baradaran HR, Haeri NS. The effectiveness of foot care education on people with type 2 diaetes in Tehran Iran. Primary Care Diabetes. 2009; 3: 73-7.

13. Carson JA, Gillham MB, Kirk LM, Reddy ST, Battles JB. Enhancing self efficacy and patient care with cardiovascular nutrition education. American Journal of Preventive Medical. 2002; 23(4): 296-302.

14. Litzelman DK, Slemenda CW, Langeferd CD, Hays LM, Welch MA, Bild Diane E, et al. Reduction of lower extremity clinical abnormalities in patients with non insulin dependent diabetes mellitus. Annals of Internal Medicine. 1997; 119(1): 36-41.

15. Hasanli Y, Amir F, Utomo W. Hubungan tingkat pengetahuan dan sikap klien diabetes mellitus terhadap perawatan kaki diabetes. Jurnal Keperawatan Profesional Indonesia. 2010; 2(2): 50-5.

16. Perrin BM, Swerissen H, Payne C. The association between foot-care self efficacy beliefs and actual foot-care behaviour in people with peripheral neuropathy: a cross-sectional study. Journal of Foot and Ankle Research. 2009; 2:3.

Lack of Exclusive Breastfeeding among Working Mothers in Indonesia

Rendahnya Pemberian ASI Eksklusif pada Ibu yang Bekerja di Indonesia

Yulia Sari

Department of Midwifery, Jakarta III Health Polytechnic Ministry of Health, Jakarta, Indonesia

Abstract

Continuity of breastfeeding process when mothers return to work is a serious issue that immediately must be followed up, so that exclusive breastfeeding program within the first six months can be achieved. Beside providing many benefits for babies, breastfeeding is also beneficial for mothers and entrepreneurs. This study aimed to determine relation of working mothers to exclusive breastfeeding. This study used was cross-sectional design with secondary data of Indonesia Demographic and Health Survey 2012 with samples as many as 1,193 mothers aged 15 – 49 years who had 0 – 5-month-old babies. Based on multivariate analysis, working mothers could decrease opportunity of exclusive breastfeeding in which mother who worked all the time were 1.54 times more likely not to give exclusive breastfeeding than mothers who did not work after controlled by maternal age at childbirth, household wealth index, and antenatal care frequency (p = 0.038; 95% CI = 1.0 to 2.3). Fulltime working mothers are twofold more likely to not be able to give exclusive breasfedding than unemployed mothers after being controlled by counfounder variable.

Keywords: Antenatal care frequency, exclusive breastfeeding, household wealth index, maternal age at chilldbirth, working mothers

Abstrak

Keberlangsungan proses menyusui pada saat ibu kembali bekerja merupakan isu serius yang harus segera ditindaklanjuti agar program pemberian Air Susu Ibu (ASI) eksklusif selama enam bulan pertama kehidupan dapat tercapai. Selain memberikan banyak manfaat bagi bayi, ASI juga bermanfaat bagi ibu dan pengusaha. Penelitian ini bertujuan untuk mengetahui hubungan ibu bekerja terhadap pemberian ASI eksklusif. Desain penelitian yang digunakan adalah potong lintang dengan data sekunder Survei Demografi dan Kesehatan Indonesia (SDKI) tahun 2012 dengan sampel berjumlah 1.193 ibu berusia 15 – 49 tahun yang memiliki bayi berusia 0-5 bulan. Berdasarkan analisis multivariat, ibu bekerja dapat menurunkan peluang pemberian ASI eksklusif dimana ibu yang bekerja sepanjang waktu lebih berisiko 1,54 kali untuk tidak memberikan ASI eksklusif dibandingkan ibu yang tidak bekerja setelah dikontrol oleh usia melahirkan ibu, indeks kesejahteraan rumah tangga dan frekuensi pemeriksaan kehamilan (p = 0,038; CI 95% = 1,0 - 2,3). Ibu bekerja dua kali memiliki peluang untuk tidak dapat memberikan ASI eksklusif daripada ibu yang tidak bekerja setelah dikontrol oleh variabel perancu.

Kata kunci: Frekuensi pemeriksaan kehamilan, ASI eksklusif, indeks kesejahteraan rumah tangga, usia melahirkan ibu, ibu bekerja

Introduction

Approximately, five million children in Indonesia are born each year. Food intake, parenting as well as maternal and child health have a major impact on health and well-being in the future. The first thousand days of life, which began from fetus in the uterus until the child aged two years and needs to get the most important period of greatest concern, at that time children who do not receive adequate nutrition can suffer from permanent damage and cannot be recovered at adult.[1]

Breastfeeding is a primary stage to get optimum health and growth of the child. Colostrum as dairy starter takes an important role in immunity formation of newborns. In addition to providing vitamins that can be digested by the baby, colostrum is the best food for the newborn gastrointestinal tract. Breastfeeding also plays an important role in preventing the onset of diseases, such as diabetes mellitus, obesity and leukemia among children. Moreover, the bond between mother and her baby is the most amazing relation in the world.[2,3] Breastfeeding may also improve neurocognitive growth, protect against respiratory inflammation and protect the mother from breast cancer.[4] However, the habit of parents to provide prelakteal may obstruck colostrum and continued breastfeeding, also increase the risk of infection.[3]

The characteristics of mothers who give exclusive breastfeeding include mothers who do not work, get counseling breastfeeding at antenatal care, get counseling regarding the provision of food for newborns during postnatal care, do not give prelakteal food and have a good knowledge of breastfeeding.[5] Meanwhile, living in urban areas, born in a health facility and a father who has a stable job give positive effects on exclusive breastfeeding.[6] Another study showed that high socio-economic status, maternal employment outside home and status as a single parent had a negative effect on exclusive breastfeeding.[7]

Continuity of breastfeeding when mothers return to work is a serious issue that must be followed up in order to achieve exclusive breastfeeding program within the first six months.[8] In fact, this is a quite heavy challenge because there are many workplaces that ignore this, so nursing mothers express breast milk at toilet, emergency stairs, or in their cars.[9] The unavailability of condusive facilities outside home, workplace conflict, family stress, rejection and the need of returning to work will have an impact on exclusive breastfeeding practices.[10] Among women who breastfeed after returning to work, there are only 10% who keep continuing breastfeed until the babies are at the age of six months. The earlier a woman returns to work, she also will stop breastfeeding earlier. Mothers who work more than 20 hours per week are likely to stop breastfeeding earlier.[8]

Likewise, a working mother is likely to breastfeed with a short duration compared to a woman who is unemployed or part time worker.[9] Nursing mother who works in the office every day leaves her baby at home at least 10 hours every day, which is calculated from the time mother goes out of home to the workplace to then back home again.[11] At this time, condition of women has increased due to the transition of women from families of workers into labor. Trends indicate that women's access to formal employment has increased over the time.[12]

Human rights commission in 1964 called on to provide protection for breastfeeding women from dismissal or discrimination in the workplace, having special place and standardized to express breast milk and the availability of suitable equipment.[9] Government Regulation Number 33 of 2012 regulates obligations of administrators workplace companies, offices owned by the government, local governments and the private sector to support the success of exclusive breastfeeding program that is by providing special facilities for breastfeeding and/or expressing breast milk according to conditions of company.[13] Law No. 13 of 2013 on Manpower set that women in Indonesia have maternity leave only three months, in which each one and a half months before and after childbirth. Upon their return to work, they face problem of supporting facility for the success of exclusive breastfeeding.[14] Besides, limitations include opportunity to breastfeed during working for women workers, physical fatigue factor and facilities, such as breastfeeding corner and breast milk storage.[15] This study aimed to determine relation of working mother to exclusive breastfeeding.

Method

The study design was cross-sectional using secondary data from the Indonesian Demographic and Health Survey (IDHS) 2012.[16] Population of IDHS 2012 was the ever married women aged 15 – 49 years within the last five years from the survey and had living babies. Samples in this study were all women in the sample of IDHS 2012 all over Indonesia as within the last five years of the survey had children aged 0 – 5 months when the interview took place. Inclusion criteria were having the last baby born alive on January 1st, 2007 until April 30th, 2012 and at the time of the interview infants aged 0-5 months, and single birth. Exclusion criteria were pregnant women, mothers who did not know the date of born children for which data was incomplete, and women who worked but did not earn wages. In this analysis, information was from 1,358 single live-born children aged 0-5 months. All of the sample was taken by using the following equation1.

To determine the effect of each variable and to deter-

Equation 1.

$$n = \frac{\left(z_{1-\alpha/2}\sqrt{2\overline{P}(1-\overline{P})} + z_{1-\beta}\sqrt{P_1(1-P_1) + P_2(1-P_2)}\right)^2}{(P_1 - P_2)^2} \times deff$$

n   = sample
Z_{1-a} = 1.96 for 95% confidence interval
z_{1-b} = z value of power test 1-b using 80%
P1   = Proportion of exclusive breastfeeding in working mother
     = 9.5%
P2   = Proportion of exclusive breastfeeding in unemployed
     mother =32%
P   = mean of P1 dan P2

mine the combined effect of several variables simultaneously, multivariate analysis can also be used to detect the interaction between independent variables that resulted in a large or small effect on the effect of each independent variable. In this study, the dependent variable used an ordinal scale with the two categorical analyses using logistic regression. The first multivariate procedure was doing analysis complete model including independent variable and all of confounding variable candidates without bivariate selection process, also interaction variable candidates. The next step was removing the interaction variables that had significant value > 0.05, then assessing the confounding variables by issuing confounding beginning of significant variables that had the highest significant value, but if there was a change exceeding 10%, the the variables were deemed as confounding and must remain in the model. At the end, it would produce final model that includes very important variables, either confounding or interaction variables.

IDHS 2012 used a complex sample design that was stratified sampling using two or more methods of sampling, so the analysis process should take design effect and be weighted. Data must be multiplied by the weight of that contained in the sample variance equal to the variance contained in the population. Therefore, the analysis would be conducted using complex sample analysis.

Results

Table 1 showed that 43.6% of 1,358 single live-born children aged 0-5 months had exclusive breastfeeding, then showed the getting older age of the baby, the percentage of exclusive breastfeeding decreased. In Table 2, most women in Indonesia did not work (62.5%). Table 3 showed that in bivariate analysis, the largest proportion of mothers who did not exclusively breastfeed was at mothers working full time for someone else (63.6%), p value 0.057; 95% CI 0.98-2.1. In addition, there was a significant relation found between parity and exclusive breastfeeding (p = 0.017; OR = 0.88; 95% CI = 0.8-0.98) (Table 3).

The bivariate analysis in Table 4 showed that the largest proportion of mothers who did not exclusively breastfeed was at mothers delivered by caesarean section at 66.1% (OR = 1.63; p = 0.030; 95% CI 1.05-2.50, followed by the mothers who delivered their babies by vaginal births (54.5%). In variable the frequency of antenatal visits, the largest proportion of mothers who did not exclusively breastfeed was at mothers doing visits for once to three times (74.5%) (OR = 2.44; p = 0.000; 95% CI 1.5-3.0), followed by mothers doing antenatal visits > four times (54.5%) and a mother never doing antenatal visit (50.2%).

After conducting a multivariate analysis stage, it was obtained that final model was the simplest models that could be generated on this analysis. Based on final model in Table 5, full-time worker women were 1.54 times more likely not able to provide exclusive breastfeeding compared to women who did not work after controlled by maternal age at childbirth, household wealth index, and antenatal care frequency (p = 0.038; 95% CI = 1.0-2.3).

Discussion

This study used cross-sectional design that would make recall bias because the mother forgot about the information of infant's food records before the survey was conducted. However, recall bias in this study could be reduced by asking breastfeeding in the last 24 hours the current survey. By asking about the breastfeeding in the last 24 hours before the survey, it would lead to bias missclasification where various events were, which had occurred between the time of birth until the survey could not be known certainly. Moreover, a possibility might occur that before the last 24 hours the baby had been given food beside breast milk, it would make different classification of exclusive breastfeeding obtained at the time of the survey with the real situation.

Multivariate analysis showed that full-time worker women were 1.54 times more likely not to be able to give exclusive breastfeeding than unemployed women after controlled by confounder variable (p = 0.038;

Table 1. Frequency of Exclusive Breastfeeding in Indonesia

| | Exclusive Breastfeeding | | | |
| Age of Infant | Yes | | No | |
	N	%	N	%
0 month (=137)	68	5.2	69	44.8
1 month (n=268)	148	54.4	120	45.6
2 months (n=245)	129	51.2	116	48.8
3 months (n=221)	92	48.7	129	51.3
4 months (n=235)	80	41.2	155	58.8
5 months (n=252)	40	17.4	212	82.6
n=1358	557	43.6	801	56.4

Table 2. Frequency of Factors Associated with Exclusive Breastfeeding

Variable	Category	n (1358)	%
Working mothers	Unemployed	862	62.5
	Self-employed/for family member/ for someone else, and occasional or seasonal	50	3.6
	Self-employed/for family member at all times	136	11.1
	For someone else at all times	310	3.6
Maternal age at childbirth	20-30 years	735	56.1
	>30 years	474	32.5
	< 20 years	149	11.4
Maternal education	Higher education	216	14.0
	Junior and senior high school	770	58.3
	Primary school	348	26.7
	No education	24	1.0
Paternal education	Higher education	201	12.4
	Junior and senior high school	762	57.9
	Primary school	380	29.0
	No education	15	0.7
Household wealth index	Richest	204	19.5
	Rich	263	21.3
	Middle	237	19.8
	Poor	282	19.5
	Poorest	372	19.9
Type of residence	Urban	649	50.9
	Rural	709	49.1
Exposure to information source	Yes	503	39.2
(television, radio and newspaper)	No	855	60.8
Maternal final say on her own health care	Woman alone	413	30.9
	Woman with husband/partner	711	51.9
	Husband or partner	234	17.2
Parity	Mean : 2.2		
	Median : 2.2		
	Minimum : 1		
	Maximum : 13		
Birth attendant	Trained delivery attendants	1180	90.8
	Untrained delivery attendants	178	9.2
Place of delivery	Public health facility	381	24.3
	Private health facility	544	53.4
	Home or others	433	22.3
Mode of delivery	Non-caesarean section	1142	84.0
	Caesarean section	216	16.0
Antenatal care frequency	≥ 4 times	1131	88.1
	1-3 times	183	10.1
	Never	44	1.8
Antenatal care services	Trained health practitioner	1300	97.2
	Untrained health practitioner	58	2.8

95% CI=1.0-2.3). This result was in line with finding that unemployed mothers were more likely to give exclusive breastfeeding 1.98 times higher than working mothers.[5]

Mothers working more than 20 hours per week had higher risk to stop breastfeeding.[8,9] A study reported that on antenatal care, the pregnant women would gain knowledge of exclusive breastfeeding. As the number of antenatal visits, the mother would be increasingly exposed to the information of exclusive breastfeeding from a midwife or other health professionals.[4] Breastfeeding mothers who received counseling about breastfeeding during antenatal care were 2.44 times more likely to give exclusive breastfeeding than those who did not receive counseling about breastfeeding.[17]

Working mothers who kept giving exclusive breast-

feeding would face many problems. This would affect them to have low confidence for giving exclusive breastfeeding.[8,9] Maternal employment had a negative correlation with the success of exclusive breastfeeding.[18] That problem could affect the let down reflex in the establishment and expenditure of milk. As a result of incomplete let down reflex, there would be accumulation of milk in the alveoli clinically visible as breasts enlarged. The pain would increase, so that stress would increase. Reduced stimulation of breastfeeding from the babies, such as when the power and frequency were less and short of feeding time means the release of prolactin from the pituitary was reduced, so that the manufacture of milk diminished.[19]

Families with higher economic status tend not to give exclusive breastfeeding. This was supported by the af-

Table 3. Bivariate Analysis of Sociodemographic Factors Related to Exclusive Breastfeeding

Variable	Category	Exclusive Breastfeeding		OR	95% CI	p Value
		Yes	No			
Working mothers	Unemployed	382 (46.5%)	480 (53,5%)	1.0		
	Self-employed/for family member/for someone else at occasional or seasonal	22 (45.8%)	28 (54,2%)	1.03	0.5-2.3	0.942
	Self-employed/for family member at all times	53 (38.9%)	83 (61,1%)	1.4	0.8-2.4	0.265
	For someone else at all times	100 (37.4%)	210 (63,6%)	1.5	0.98-2.1	0.057
Maternal age at childbirth, years	20-30 years	307 (43.8%)	428 (56.2%)	1.0		
	>30 years	202 (47.7%)	272 (52.3%)	0.9	0.6-1.2	0.355
	< 20 years	48 (30.8%)	101 (69.2%)	1.8	1,0-3.1	0.052
Maternal education	Higher education	85 (47.1%)	131 (52.9%)	1.0		
	Junior and senior high school	315 (42.3%)	455 (57.7%)	1.2	0.7-2.0	0.437
	Primary school	143 (44.3%)	205 (55.7%)	1.12	0.6-1.9	0.694
	No education	14 (51.1%)	10 (48.9%)	0.85	0.2-3.5	0.824
Paternal education	Higher education	74 (38.7%)	127 (61.3%)	1.0		
	Junior and senior high school	309 (44.3%)	453 (55.7%)	0.8	0.5-1.3	0.335
	Primary school	169 (44.8%)	211 (55.2%)	0.8	0.5-1.3	0.349
	No education	5 (22.6%)	10 (56.4%)	2.2	0.5-10.1	0.328
Parity				0.9	0.8-0.98	0.017*
Household wealth index	Richest	75 (47.8%)	129 (52.2%)	1.0		
	Rich	92 (35.3%)	171 (63.7%)	1.6	0.9-2.8	0.094
	Middle	104 (44%)	133 (56.0%)	1.2	0.7-2.0	0.587
	Poor	119 (43.4%)	163 (56.6%)	1.2	0.7-2.0	0.508
	Poorest	167 (47.1%)	205 (52.9%)	1.0	0.6-1.7	0.907
Type of residence	Urban	257 (43.2%)	392 (56.8%)	1.0		
	Rural	300 (44%)	409 (56%)	0.97	0.7-1.3	0.844
Exposure to information source (television, radio and newspaper)	Yes	195 (43.1%)	308 (56.9%)	1.0		
	No	362 (43.9%)	493 (56.1%)	0.97	0.7-1.3	0.841
Maternal final say on her own health care	Woman alone	172 (44.8%)	241 (55.2%)	1.0		
	Woman with husband/partner	291 (43.4%)	420 (56.7%)	1.1	0.7-1.6	0.757
	Husband or partner	94 (42.1%)	140 (57.9%)	1.1	0.7-1.9	0.699

*p value < 0.05

Table 4. Bivariate Analysis of Maternal Health Services Factors Related to Exclusive Breastfeeding

Variable	Category	Exclusive Breastfeeding		OR	95% CI	p Value
		Yes	No			
Birth attendant	Trained delivery attendants	486 (43.3%)	694 (56.7%)	1.0		
	Untrained delivery attendants	71 (46.1%)	107 (53.9%)	0.9	0.6-1.4	0.643
Place of delivery	Public health facility	171 (46.7%)	210 (53.3%)	1.0		
	Private health facility	214 (43%)	330 (57%)	1.16	0.8-1.7	0.463
	Home or others	172 (41.6%)	261 (58.4%)	1.23	0.8-1.9	0.336
Mode of delivery	Non-caesarean section	495 (45.5%)	647 (54.5%)	1.0		
	Caesarean section	62 (33.9%)	154 (66.1%)	1.6	1.1-2.5	0.030*
Antenatal care frequency	4 times or more	470 (45.5%)	661 (54.5%)	1.0		
	1-3 times	65 (25.5%)	118 (74.5%)	2.4	1.5-3.0	0.000**
	Never	22 (49.8%)	22 (50.2%)	0.8	0.3-2.0	0.704
Antenatal care services	Trained health practitioner	531 (43.7%)	769 (56.3%)	1.0		
	Untrained health practitioner	26 (39.7%)	32 (60.3%)	1.2	0.5-2.6	0.681

* p value < 0.05, ** p value < 0.000

fordability to buy extra food, such as milk formula that could be given to infants in addition to breast milk. The study also revealed that welfare of the family played an important role in the breastfeeding habit.[17] Infants from families with higher economic status rarely got exclusive breastfeeding because of exposure to formula milk and financial support.[20]

Although the businesses or employers already knew about the benefits of breastfeeding, but there were still no efforts made to support the success of breastfeeding programs in the workplace. Some barriers to the success of exclusive breastfeeding programs in the workplace included the unavailability of private lactation areas to express the milk, the absence of a flexible schedule, bad relation with the employer or supervisor, declining productivity and financial concern. Influence of employers or

Table 5. Final Model of Factors Related to Exclusive Breastfeeding

Variable	Category	Exclusive Breastfeeding				
		B	SE	p Value	OR	95% CI
Working mothers	Unemployed			1.0		
	Self-employed/for family member/for someone else at occasional or seasonal	0.800	0.2	0.843	1.08	0.5-2.4
	Self-employed/for familiy member at all times	0.412	1.5	0.138	1.51	0.9-2.4
	For someone else at all times	0.429	2.1	0.038*	1.54	1.0-2.3
Maternal age at childbirth	20-30 years			1.0		
	>30 years	-0.097	-0.6	0.560	0.91	0.7-1.3
	< 20 years	0.603	2.0	0.042*	1.82	1.0-3.3
Household wealth index	Richest			1.0		
	Rich	0.477	1.7	0.092	1.61	0.9-2.8
	Middle	0.130	0.5	0.646	1.14	0.7-2.0
	Poor	0.120	0.4	0.661	1.13	0.7-1.9
	Poorest	-0.121	-0.5	0.645	0.89	0.5-1.5
Antenatal care frequency	4 times or more			1.0		
	1-3 times	0.958	3.8	0.000**	2.61	1.6-4.3
	Never	0.034	0.1	0.940	1.03	0.4-2.5

*p value < 0.05, **p value = < 0.000

businesses took an important role in the success of exclusive breastfeeding for mothers who had a regular job outside the home, then programs that could give support the exclusive breastfeeding were required, at least providing time for nursing mothers to express the breast milk. Flexibility of break to express milk needed a range every three or four hours, therefore it needed to make the difference between nursing mothers and the other workers.[9]

Availability of private lactation areas and other supporting facilities today do not fully comply with legislation in Indonesia. It requires a daycare as a complement of the private lactation areas, so the nursing mothers may bring their babies to workplace that will enhance the success of exclusive breastfeeding.[21] There remain companies that do not provide lactation space, so that working mothers express their milk in the toilets or female praying room and store it in the pantry refrigerator along with food and beverage of other workers.[22]

There are some policies that specifically accommodate the needs of working mothers to breastfeed in accessing rights. According to Government Regulation No. 33 of 2012 on Clause 30, businesses or employers shall give support on exclusive breastfeeding program and provide private lactation areas in workplace.[13] Minister of Health has issued the Regulation of the Health Ministry of the Republic of Indonesia No. 15 of 2013 regarding the procedure for the provision of private lactation area, but not all businesses or employers provide lactation room convenient with the Government Regulation.[23]

Indonesian Government also issues other regulations. Regulations by the three ministries including Ministry of Women's Empowerment, Ministry of Manpower and Ministry of Health of the Republic of Indonesia No. 48/MEN.PP/XII/2008, PER.27/MEN/XII/2008 and 1177/ Menkes/PB/XII/2008 year 2008 on Improving the Breastfeeding during Work Hours in Workplace.[24] However, in practice, the rules get less exercise control or supervision with related parties, such as government or private agencies, beside the lack of enforcement of sanctions/rewards for those who have to enforce the rules properly or not as a form of appreciation for the governments that have contributed to an increase in exclusive breastfeeding in Indonesia. The penalty for corporates and individuals who dissuade exclusive breastfeeding program is included in Clause 200 and 201 of Health Regulation No. 36 of 2009 with arrangement of sanction in forms of imprisonment and fine.[25]

Conclusion

Participation of mothers in the family economy can lower the chances of exclusive breastfeeding, full-time working mothers are 1.54 times more likely not be able to give exclusive breastfeeding than unemployed mothers after being controlled by counfonder variable.

Recommendation

Health Ministry of the Republic of Indonesia can enhance the role of health workers in providing health counseling for pregnant mothers, particularly about the necessity of exclusive breastfeeding and balanced diet. Moreover, the authority should provide working mothers information concerning on management of exclusive breastfeeding, such as techniques of expressing milk and storing breast milk properly, beside the needs to enhance

cross-sectoral cooperation in providing information about benefits of exclusive breastfeeding for the mother and her baby as well as the benefits for the businesses and employers.

Manpower Ministry of the Republic of Indonesia can conduct monitoring to businesses and employers to ensure the availability of private lactation room and the facilities that support for working mothers to continue exclusive breastfeeding. It is expected that the businesses or employers can arrange flexibility of break schedules, especially for full-time employees, so that working mothers can express milk with a quiet and comfortable condition. Also, the employers can create a comfortable working atmosphere that does not result stress or pressure for working mothers, especially for the employees who work throughout the year, as well as provide adequate daycare facilities.

Acknowledgement

References

1. Badan Perencanaan Pembangunan Nasional & The United Nations Children's Fund. Periode emas pada 1000 hari pertama kehidupan. Buletin 1000 Hari Pertama Kehidupan. Jakarta: Badan Perencanaan Pembangunan Nasional & The United Nations Children's Fund; 2013.

2. Khanal V, Aghikari M, Sauer K, Zhao Y. Factors associated with the introduction of prelacteal feeds in Nepal: finding from the Nepal demoghraphic and health survey 2011. International Breastfeeding Journal. 2013; 8: 1-9.

3. Roy MP, Mohan U, Singh SK, Singh VK, Srivastava AK. Determinants of prelacteal feeding in Rural Nothern India. International Journal of Preventive Medicine. 2014; 5 (5): 658-63

4. Khanal V, Sauer K, Zhao Y. Exclusive breastfeeding practices in relation to social and health determinants: a comparison of the 2006 and 2011 Nepal demographic and health surveys. BMC Public Health. 2013; 13 (958):1-13.

5. Mekuria G, Edris M. Exclusive breastfeeding and associated factors among mothers in Debre Markos, Northwest Ethiopia: a cross-sectional study. International Breastfeeding Journal. 2015; 10 (1):1-7

6. Kamudoni P, Maleta K, Shi Z, Holboe-Ottesen G. Infant feeding practices in the first 6 months and associated factors in a rural and semiurban community in Mangochi District, Malawi. Journal Human Lactation. 2007; 23(4): 325-32.

7. Perez-Escamilla R, Segura-Millan S, Canahuati J, Allen H. Prelacteal feeds are negatively associated with breast-feeding outcomes in Honduras. Journal Nutrition. 1996; 126: 2765-73.

8. Wyatt S. Challenges of the working breastfeeding mother: workplace solutions. American Association of Occupational Health Nurses Journal. 2002; 50 (2): 61.

9. Mills SP. Workplace lactation programs: a critical element for breastfeeding mother's success. American Association of Occupational Health Nurses Journal. 2009; 57 (6): 227-31.

10. Ekanem IA, Ekanem AP, Asuquo A, Eyo VO. Attitude of working mothers to exclusive breastfeeding in Calabar Municipality, cross river state, Nigeria. Journal of Food Research. 2012; 1(2): 71-5.

11. Abdullah GI. Determinan pemberian ASI Eksklusif pada ibu bekerja di Kementerian Kesehatan Republik Indonesia tahun 2012 [postgraduate thesis]. Depok: Fakultas Kesehatan Masyarakat Universitas Indonesia; 2012.

12. Dewi PM. Partisipasi tenaga kerja perempuan dalam meningkatkan pendapatan keluarga. Jurnal Ekonomi Kuantitatif Terapan. 2012; 5(2):119-224.

13. Presiden Republik Indonesia. Peraturan Pemerintah Republik Indonesia Nomor 33 tahun 2012 tentang pemberian air susu ibu eksklusif. Jakarta: Kementerian Sekretariat Negara Republik Indonesia; 2012.

14. Presiden Republik Indonesia. Undang-Undang Republik Indonesia Nomor 13 Tahun 2003 Tentang Ketenagakerjaan. Jakarta: Kementerian Sekretariat Negara Republik Indonesia; 2013.

15. Sartono A. Praktek menyusui ibu pekerja pabrik dan ibu tidak bekerja di Kecamatan Sukoharjo Kota Kabupaten Sukoharjo. Jurnal Gizi Universitas Muhammadiyah Semarang. 2013; 2(1): 9-17.

16. Badan Kependudukan dan Keluarga Berencana Nasional, Badan Pusat Statistik & Kementerian Kesehatan. Survei Demografi dan Kesehatan Indonesia (SDKI). Jakarta: Badan Kependudukan dan Keluarga Berencana Nasional, Badan Pusat Statistik & Kementerian Kesehatan; 2013.

17. Baale E. Determinants of early initiation, exclusiveness and duration of breastfeeding in Uganda. Journal Health Population Nutrition. 2014; 32 (2): 249-60.

18. Kurniawan B. Determinan keberhasilan pemberian air susu ibu eksklusif. Jurnal Kedokteran Brawijaya. 2013; 27(4): 236-40.

19. Soetjiningsih. ASI: petunjuk untuk tenaga kesehatan. Jakarta: EGC; 1997.

20. Titaley CR, Loh PC, Prasetyo S, Ariawan I, Shankar AH. Socio-economic factors and use of maternal health service are associated with delayed initiation and non-exclusive breastfeeding in Indonesia: secondary analysis of indonesia demographic and health surveys 2002/2003 and 2007. Asia Pacific Journal of Clinical Nutrition. 2014; 23(1): 91-104.

21. Handayani H. Kendala pemanfaatan ruang asi dalam penerapan asi eksklusif di kementerian pemberdayaan perempuan dan perlindungan anak tahun 2011 [undergraduate thesis]. Depok: Fakultas Kesehatan Masyarakat Universitas Indonesia; 2012.

22. Rizkianti R, Prasodjo R, Novianti, Saptarini I. Analisis faktor keberhasilan praktik pemberian ASI eksklusif di tempat kerja pada buruh industri tekstil di Jakarta. Buletin Penelitian Kesehatan. 2014; 42 (4); 237-48.

23. Menteri Kesehatan Republik Indonesia. Peraturan menteri kesehatan Republik Indonesia nomor 15 tahun 2013 tentang tata cara penyediaan fasilitas khusus menyusui dan/atau memerah air susu ibu. Jakarta: Kementerian Kesehatan Republik Indonesia; 2013.

24. Menteri Negara Pemberdayaan Perempuan, Menteri Tenaga Kerja dan Transmigrasi, Menteri Kesehatan. Peraturan bersama Menteri Negara Pemberdayaan Perempuan, Menteri Tenaga Kerja, dan Transmigrasi, dan Meteri Kesehatan Nomor 48/MEN.PP/XII/2008, PER.27/MEN/XII/2008, dan 1177/MENKES/PB/XII/2008 Tahun 2008 tentang peningkatan pemberian air susu ibu selama waktu kerja di

tempat kerja. Jakarta: Kementerian Pemberdayaan Perempuan, Kementerian Tenaga Kerja dan Transmigrasi, dan Kementerian Kesehatan Republik Indonesia; 2008.

25. Presiden Republik Indonesia. Undang-Undang Republik Indonesia Nomor 36 Tahun 2009 tentang Kesehatan. Jakarta: Kementerian Sekretariat Negara; 2009.

The Risk of Pneumonia among Toddlers in Lambatee, Aceh

Risiko Kejadian Pneumonia pada Anak Bawah Lima Tahun di Lambatee, Aceh

Rapitos Sidiq*, Ritawati*, Roma Sitio*, Siti Hajar**

*Aceh Health Polytechnic Ministry of Health, Aceh, Indonesia, **Tengku Fakinah Banda Aceh Nursing Academy, Aceh, Indonesia

Abstract

Pneumonia is one of very important global health problems among toddlers, especially in developing countries. Nowadays, pneumonia is one of largest causes of child mortality, especially in newborn period. In Aceh Province, pneumonia disease is the eighth of 25 biggest diseases found at primary health care with 112 cases, while pneumonia among outpatient sufferers in Aceh reached 434 cases (29.03%).This study aimed to determine factors related to incidence of pneumonia toddlers in Lambatee Village, Darul Kamal Subdistrict, Aceh Besar District. This study was analytical descriptive using cross-sectional design. Samples of study were mothers and toddlers amounted to 48 people. Data were collected on August 3rd – 14th, 2015 by interview, observation. Multivariate analysis used logistic regression. Results of study showed that the factor physical condition of house sanitation influenced to trend among toddlers suffering from pneumonia with p value 0.01< 0.05, the highest OR score 6.431 and 95% CI = 1.559 - 26.532. In conclusion, physical condition of house sanitation had six times risk of causing trend of pneumonia incidence among toddlers in Lambatee Village, Darul Kamal Subdistrict, Aceh Besar District.

Keywords: Incidence, physical sanitation, housing, pneumonia, toddlers

Abstrak

Pneumonia merupakan salah satu masalah kesehatan global yang sangat penting pada anak bawah lima tahun (balita), khususnya pada negara-negara berkembang. Saat ini, pneumonia merupakan salah satu kasus penyebab kematian pada anak terbesar, terutama pada periode baru lahir. Di Provinsi Aceh, penyakit pneumonia merupakan penyakit urutan ke-8 dari 25 penyakit terbesar yang ditemukan di puskesmas dengan jumlah 1.112 kasus. Sedangkan besarnya kasus pneumonia pada penderita rawat jalan di Aceh mencapai 434 kasus   (29,03%). Penelitian ini bertujuan untuk mengetahui faktor-faktor yang berhubungan dengan kejadian pneumonia pada balita. Penelitian bersifat analitik dengan desain potong lintang. Sampel penelitian adalah ibu dan balita yang berjumlah 48 orang. Pengumpulan data dilaksanakan tanggal 3 – 14 Agustus 2015 dengan wawancara dan observasi. Analisis multivariat menggunakan regresi logistik. Hasil penelitian menunjukkan bahwa faktor kondisi sanitasi rumah secara fisik berpengaruh terhadap kecendrungan balita menderita penyakit pneumonia dengan nilai p 0,01 < 0,05, dengan nilai OR tertinggi 6,431 dan CI 95% = 1.559 - 26.532. Disimpulkan bahwa kondisi sanitasi rumah secara fisik memiliki peluang enam kali menyebabkan terjadinya pneumonia pada balita di Desa Lambatee, Kecamatan Darul Kamal, Kabupaten Aceh Besar.

Kata kunci: Insiden, kondisi fisik rumah, sanitasi, pneumonia, balita

Introduction

Pneumonia is one of very important global health problems among toddlers, especially in developing countries. This disease is because of *pneumococcus* virus that mostly attacks those aged older than 65 years and children who suffer from the decrease of body immune.[1] Nowadays, pneumonia is one of largest causes of child mortality, especially in newborn period.[2] So that, World Health Organization (WHO) in cooperation with United Nations Children's Fund (UNICEF) make The Integrated Management of Childhood Illness (IMCI). The aim of this activity is to decrease number of child death and illness due to diseases including pneumonia.[3] Number of child death due to pneumonia reached 30% in 1993, so the fourth Millennium Development Goals (MDG4) was to decrease number of pneumonia illness by two-third of the total from 1990 to 2015.[4]

Directorate General of Transmitted Disease Eradication and Environmental Health at Health Ministry of the Republic of Indonesia estimated that mortality due to pneumonia as the major cause of Acute Respiratory Infection (ARI) in Indonesia in the late 2000 was as many as five cases between 1,000 infants and toddlers. This means that 150,000 infants and toddlers died every year due to pneumonia, or 12,500 victims per month or 416 cases in a day or 17 per hour or an infant and a toddler every five minutes.[5] In Aceh Province, ARI pneumonia disease is the eighth of 25 major diseases found at primary health care as many as 1,112 cases. Meanwhile, Upper Respiratory Infection (URI) pneumonia disease among outpatients in Aceh reached 434 cases (29.03%).[6]

Darul Kamal Subdistrict is one of areas in Aceh Besar consisting of 14 villages, namely Biluy, Blangkiree, Empetring, Lhang, Lamsod, Lambatee, Lambaro Biluy, Lambleut, Lamkunyet, Lamtadok, Manedeah, Neusok, Turam, Teubaluy. Pneumonia case in Darul Kamal Subdistrict occurs from year to year, even though preventive actions have been performed. Based on data of pneumonia disease as obtained from Darul Kamal Aceh Besar Primary Health Care on January 22nd, 2015, there were 47 toddlers by 11.80% case in Lamkunyet Village in 2012, 40 toddlers by 8.38% case in Lambatee Village in 2013 and pneumonia case more increased in 2014 that reached 13.39% of 77 toddlers in the Village. [7]

Based on results of observation, there was data showing that Lambatee Village is a village located in the wide plain consisting of paddy fields and coconut plantation, so many villagers work as farmers that own cattles, such as cows, buffaloes and goats. As villagers in general, the location of stockyards is near to the house, such as at the house backyard and side yard, even there is any stockyard that integrate with the walls. Such condition of stockyard near to the house would affect the hygiene of house environment, especially physical condition of house environment that would be unhealthy, particularly in rainy season. The villagers' house walls are mostly made of woods or bricks that have not been plastered. These villagers still use woods and coconut fibre for cooking. The interesting part is that when the harvest season is over, the villagers always burn straws, so the condition of village is full of smog. Study proved that smoke of firewood in the kitchen had the same effects with the smoke around the house environment to women and children, especially toddlers.[8,9]

Pneumonia incidence among toddlers is influenced by many factors, such as socio-economic status, behavior, physical condition of house, drinking water source, condition of kitchen ventilation, household wastewater disposing system.[3] WHO identified that environmental factors which could increase the child vulnerability of pneumonia was air pollution in the room because of cooking and warming with fuel such as woods or waste, and because of living in crowded house and smoker parents.[10] Therefore, based on such phenomenon, it needed a study to find risks affecting on the incidence of pneumonia disease among toddlers, so proper interventions to solve the incidence could be determined. This study aimed to determine factors related to incidence of pneumonia toddlers in Lambatee Village, Darul Kamal Subdistrict, Aceh Besar District.

Method

This study was analytical descriptive using cross-sectional design. Subjects of study were mothers having toddlers and primary health care workers. The total of toddlers' mothers that became samples were 48 people. The total of sample was determined using Slovin formula with 95% precision value or0.05. Samples were taken using proportional random sampling method in four hamlets around Lambatee Village. Independent variables in this study were cattle ownership, distance between house and stockyard, hygiene of house environment and physical condition of house sanitation and the dependent variable was incidence of pneumonia in toddlers. Data were collected on August 3rd – 14th, 2015 by interview, observation to secondary data concerning incidence of pneumonia in toddlers as well as observation on the distance between house and stockyard, physical condition of house sanitation and hygiene of house environment. In this study, there was no intervention to subjects of study. Steps of data processing were editing, coding, transfering and tabulating. Data analysis used analysis of univariate, bivariate with chi square, and multivariate with logistic regression, using a significant level of 0.05 (5%) to determine the risk of the independent variables on the dependent variable and the estimation of the risk (odds ratio) of pneumonia incidence among toddlers.

Results

Data of respondents' characteristics were based on age of mother, age of toddler, maternal education, maternal occupation, cattle ownership, the distance between house and stockyard, physical condition of house sanitation and hygiene of house environment.

Based on Table 1, mothers of toddlers who became respondents were mostly aged 18 – 40 years, as many as 45 people (93.8%) with 31 (66.7%) suffering from pneumonia. Then toddlers were mostly aged > 3 – 5 years as many as 35 toddlers with number of pneumonia sufferers was 23 toddlers (62.9%). According to maternal education, mothers were mostly graduated from senior high school as many as 29 (60.4%) with number of toddlers suffering from pneumonia was 21 toddlers (69.9%). Then based on maternal occupation, most of mothers were housewives as many as 33 (68.8%) with number of toddlers suffering from pneumonia was 22 (64.6%). For the cattle ownership, most of mothers had cattles that were 33 mothers (68.8%) with number of toddlers suffering from pneumonia was 22 (66.7%). Distance of house and stockyard was mostly more than 10 meter as amounted to 40 mothers (83.3%) with number of toddlers suffering from pneumonia was 28 (70%). Hygiene of house environment was mostly bad as many

as 27 people (56.25%) with number of toddlers suffering from pneumonia was 16 (59.26%). Then for physical condition of house sanitation, as many as 33 people (66.67%) were at bad category with number of toddlers suffering from pneumonia was 26 (81.25%).

The relation between the independent variables with the dependent variable as the results was presented in the following table (Table 2).

Based on Table 2, there was p value of each independent variable as follows: cattle ownership = 0.125, distance between house and stockyard = 0.120, hygiene of house environment = 0.032, physical condition of house sanitation = 0.004. Of the four variables, the cattle ownership and distance between house and stockyard had p value > 0.05, therefore these two variables were unqualified for multivariate analysis. Meanwhile, the variable hygiene of house environment as well as physical condition of house sanitation were qualified for multivariate test because of p value < 0.05. The result was presented in Table 3.

Based on Table 3, after test of variable physical condition of house sanitation and hygiene of house environment was conducted, there was a value that variable physical condition of house sanitation had influence to incidence of pneumonia among toddlers (p value 0.010 <

Table 1. Characteristics of Respondents and Pneumonia Incidence among Toddlers

Characteristics	Category	n	%	Pneumonia			
				Exist	%	None	%
Age of mother	18 – 40 years old	45	93.75	31	66.67	14	33.33
	41 – 60 years old	3	6.25	2	66.67	1	33.33
Age of toddler	< 2 years old	10	20.83	8	80.00	2	20.00
	2-3 years old	3	6.25	2	66.67	1	33.33
	> 3-5 years old	35	72.92	23	62.86	12	37.14
Maternal education	Elementary school	2	4.17	2	100	0	0.00
	Junior high school	8	16.67	4	50.00	4	50.00
	Senior high school	29	60.42	21	68.97	8	31.03
	Diploma 3	9	18.75	6	66.67	3	33.33
Maternal occupation	Housewife	33	68.75	22	63.64	11	36.36
	Civil servant	6	12.50	4	66.67	2	33.33
	Employee	9	18.75	7	77.78	2	22.22
Cattle ownership	Exist	33	68.75	22	66.67	11	33.33
	None	15	31.25	11	73.33	4	26.67
Distance between house and stockyard	< 10 Meter	8	16.67	5	62.50	3	37.50
	> 10 Meter	40	83.33	28	70.00	12	30.00
Hygiene of house environment	Good	21	43.75	17	80.95	4	19.05
	Bad	27	56.25	16	59.26	11	40.74
Physical condition of house sanitation	Good	16	33.33	7	43.75	9	56.25
	Bad	32	66.67	26	81.25	6	18.75

Table 2. Relations Pneumonia on Toddlers

Risk Factor	B	S.E	p Value	Exp (B)	95% CI
Physical condition of house sanitation	2.466	0.847	0.004	11.778	2.240 - 61.94
Hygiene of house environment	-2.352	1.096	0.032	0.095	0.011 - 0.816
Cattle ownership	-1.810	1.181	0.125	0.164	0.016 -1.657
Distance between house and stockyard	-1.641	1.055	0.120	0.194	0.024 - 1.534

Table 3. Analysis with Logistic Regression Test

Risk Factor	B	S.E	p Value	Exp (B)	95% CI
Physical condition of house sanitation	1.861	0.723	0.010	6.431	1.559 - 26.532
Hygiene of house environment	-1.276	0.755	0.091	0.279	0.064 - 1.226

0.05), the highest Exp (B)/OR score 6.431 and 95% CI = 1.559 – 26.532, which means that bad physical condition of house sanitation had 6 times risk of causing incidence of pneumonia on toddlers.

Discussion

This study found that the factor physical condition of house sanitation had a relation with pneumonia disease incidence among toddlers. This proved that physical condition of house, such as humid floors, dusty walls, the use of firewoods for cooking and cigarette smoke inside house became risk factors for toddlers suffering from pneumonia. Study conducted by Dherani,[11] found that pneumonia incidence among children had 1.8 times risk higher on children exposed to smoke of solid fuel like firewoods than children who were not exposed to.

Study conducted by Thorsson,[8] found that the high biomass smoke exposure and smoke of firewood outside opened room could arise health risk/pneumonia quite high among women and children in household. Even study conducted by Gittins,[12] showed that effects of air pollution because of smoke played a role to the deaths among toddlers suffering from pneumonia. Study of Yuwono,[13] concerned on physical environment of house factors related to pneumonia incidence among toddlers in work area of Kawunganten Primary Health Care, Cilacap District. He found that there was a significant relation between physical environment of house factors, such as types of floor, condition of walls, width of ventilation, residence density level, humidity level, the use of wood fuel and the smoking habit of family members with pneumonia incidence among toddlers.

Study of Sugihartono and Nurjazuli,[14] concerned on Risk Factor Analysis of Pneumonia Incidence on Under-Five-Year-Old Children in The Working Area of Public Health Center, Sidorejo, Pagar Alam City. This study found that type of house floor was 10 times higher, presence of smoking family members was 8 times higher of causing pneumonia incidence among toddler. Another study that found relation between house sanitation and pneumonia incidence among toddlers was the study conducted by Pramudiyani and Prameswari in 2010.[15] If this study was compared to other related studies above, there were similarities or relation found, particularly from observed subjects and objects as well as obtained results. The difference was found in the depth of observed aspects that highlighted physical condition of child's bed-

room namely mosquito repellent. Generally, pneumonia incidence among toddlers in Indonesia was due to condition of physical house environment other than social, demographic and economic factors.[16]

However, if it was observed deeper, this physical condition of house sanitation problem was tightly related to behaviors, so environment-based disease transmission like pneumonia occurred. This means that if people could change bad behaviors, such as not smoking inside house, not carrying toddlers when going to cook in the kitchen, maintaining floor to be not humid, keep the floors clean without dust especially for wood-made walls; thus, incidence of this disease could be prevented. Then Kasnodihardjo,[17] in study titled "Description of Environment Sanitation, Maternal Behavior and Child Health in 2009" also found relation between behavior and transmission of environment-based disease among toddlers. This study found that it was only 19.2% families of toddlers suffering from pneumonia were not smoking inside the house, which means that there was possibility about 80.8% having smoking habit inside house.

Another similar study also proved that toddlers who lived in the house with family members that had smoking habit had 2.24 times higher risk of suffering from pneumonia than toddlers who did not live in the house with family members that had smoking habit.[18] This study and related studies above proved that the factor unhealthy environment of house as a result of bad behavior could be the risk factor affecting toddlers suffer from pneumonia. This was in accordance with publication of WHO that environmental factors which could increase child vulnerability to pneumonia were air pollution in the room because of cooking, warming by using fuel such as woods or waste, living in a crowded house as well as smoker parents.[10] To solve such problem, the most effective strategy was by education to people in order to increase their care or awareness of health, especially family. Most of maternal' education level in Lambatee Village were senior high school level (60.42%), but had the most dominant number of toddlers suffering from pneumonia (68.97%). By such education level, mothers in the Village had got a knowledge of healthy and hygienic lifestyle, yet due to behavior of other family members especially smoker husbands.

Furthermore, socio-economic condition also influenced house condition like cooking which used firewoods and coconut fibre, so physical condition of house envi-

ronment had not met health requirement. This condition was also influenced by location of the village around paddy field and plantation area, therefore in particular season, the village was full of smoke because of straw burning after harvest of rice. This study also found that most of toddlers (62.86%) aged > 3 – 5 years suffered from pneumonia, which means that those toddlers had been long exposed to the risk factor up to the age of more than three years still suffered from pneumonia. So that, physical condition of house environment should be repaired by management of house ventilation, health counseling and improvement of health worker's capacity in handling of pneumonia among toddlers in order to prevent transmission through air to healthy toddlers.[1,2]

Then for condition in relation to smoke around the house environment or outdoor, it needed special actions or strategies, such as managing straw burning that should be limited between sunset to reduce pollution level.[8]

Conclusion

This study shows that physical condition of house sanitation has six times risk of trend of pneumonia incidence among toddlers, which means that bad condition of house sanitation will contribute to the pneumonia incidence among toddlers six times if compared to good condition of house sanitation.

Recommendation

Village officials should empower communities to repair physical condition of house sanitation, then there should be separation of house with kitchen using firewoods. Moreover, village officials should always provide education to change people's behavior, such as smoking inside house.

References

1. Onyango D, Kikuvi G, Amukoye E, Omolo J. Risk factors of severe pneumonia among children aged 2-59 months in western Kenya: a case control study. The Pan African Medical Journal. 2012;13:45.
2. Campbell H, el Arifeen S, Hazir T, O'Kelly J, Bryce J, Rudan I, et al. Measuring coverage in MNCH: challenges in monitoring the proportion of young children with pneumonia who receive antibiotic treatment. PLoS Med. 2013;10 (5):1–6.
3. Kosai H, Tamaki R, Saito M, Tohma K, Alday PP, Tan AG, et al. Incidence and risk factors of childhood pneumonia-like episodes in Biliran Island, Philippines—a community-based study. PLoS One [serial in internet]. 2015 [cited 10 Aug 2016]; 10 (5): e0125009. Available from: http://dx.plos.org/10.1371/journal.pone.0125009
4. Rudan I, Boschi-Pinto C, Biloglav Z, Mulholland K, Campbell H. Epidemiology and etiology of childhood pneumonia. Bulletin of World Health Organization. 2008; 86 (5): 408–16.
5. Direktorat Jendral Pencegahan dan Pengendalian Penyakit dan Lingkungan Kemenkes Republik Indonesia. Pedoman pengendalian infeksi pernafasan akut. Jakarta: Kementerian Kesehatan Republik Indonesia; 2011.
6. Dinas Kesehatan Provinsi Aceh. Profil kesehatan Aceh. Banda Aceh: Dinas Kesehatan Provinsi Aceh; 2014.
7. Puskesmas Darul Kamal. Profil kesehatan puskesmas. Aceh Besar: Puskesmas Darul Kamal; 2014.
8. Thorsson S, Holmer B, Andjelic A, Lindén J, Cimerman S, Barregard L. Carbon monoxide concentrations in outdoor wood-fired kitchens in Ouagadougou, Burkina Faso - implications for women's and children's health. Environtmental Monitoring and Assessment. 2014; 186(7): 4479–92.
9. Gouveia N, Fletcher T. Respiratory diseases in children and outdoor air pollution in São Paulo, Brazil: a time series analysis. Occupational and environmental medicine [serial on internet]. 2000 [cited 2016 Jan 6]; 57(7): 477–83. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1739993&tool=pmcentrez&rendertype=abstract
10. World Health Organization [homepage in internet]. Pneumonia. 2015 [cited 2016 Apr 18]. Available from: http://www.who.int/mediacentre/factsheets/fs331/en/
11. Dherani M, Pope D, Mascarenhas M, Smith KR, Weber M, Bruce N. Indoor air pollution from unprocessed solid fuel use and pneumonia risk in children aged under five years: A systematic review and meta-analysis. Bulletin of World Health Organization. 2008; 86 (5): 390–4.
12. Gittins M, McNamee R, Carder M, Beverland I, Agius RM. Has the short-term effect of black smoke exposure on pneumonia mortality been underestimated because hospitalisation is ignored: findings from a case-crossover study. Environtmental Health [serial on internet]. 2013 [cited 2016 Feb 5]; 12 (1): 97. Available from: http://www.ehjournal.net/content/12/1/97
13. Yuwono TA. Faktor – faktor lingkungan fisik rumah yang berhubungan dengan kejadian pneumonia pada anak balita di wilayah kerja puskesmas [postgraduate thesis]. Semarang: Program pascasarjana Universitas Diponegoro Semarang; 2008.
14. Sugihartono, Nurjazuli. Analisis faktor risiko kejadian pneumonia pada balita di wilayah kerja Puskesmas Sidorejo Kota Pagar Alam: risk factor analysis of pneumonia incidence on under-five-year-old children in the working area of public health center , Sidorejo, Pagar Alam City. Jurnal Kesehatan Lingkungan Indonesia. 2012;11(1):82–6.
15. Pramudiyani NA, Prameswari GN. Hubungan antara sanitasi rumah dan perilaku dengan Kejadian pneumonia balita. Jurnal Kesehatan Masyarakat. 2011; 6(2): 71–8.
16. Anwar A, Dharmayanti I. Pneumonia pada anak balita di Indonesia. Kesmas: Jurnal Kesehatan Masyarakat Nasional. 2014; 8 (8): 359–65.
17. Kasnodihardjo, Elsi E. Deskripsi sanitasi lingkungan, perilaku ibu, dan kesehatan anak. Kesmas: Jurnal Kesehatan Masyarakat Nasional. 2013; 7(9): 415–20.
18. Hartati S. Analisis faktor resiko yang berhubungan dengan kejadian pneumonia pada anak balita Di RSUD Pasar Rebo Jakarta [postgraduate thesis]. Depok: Fakultas Ilmu Keperawatan Universitas Indonesia; 2011.

Motivation Variables to Use Contraceptive among Male in Yogyakarta

Variabel Motivasi dalam Menggunakan Kontrasepsi pada Pria di Yogyakarta

Susiana Sariyati, Febrina Suci Hati, Fatimah

Diploma 3 Midwifery Study Program, Faculty of Health Sciences, Universitas Alma Ata, Yogyakarta, Indonesia

Abstract

Family Planning program is one of very important national development programs in order to embody wealthy Indonesian families. Role of such program has a big influence to a person's reproductive health, both reproductive health of woman and man. This study aimed to determine factors related to reproductive men's motivations for contraceptive use in Bumijo Village, Jetis District, Yogyakarta City. This study was conducted in Bumijo Village, Jetis Subdistrict, Yogyakarta. Subjects were 161 men in reproductive age older than 30 years old and had two children or more. This study was quantitative with logistic regression analysis. Results of study showed relation between knowledge and motivation (p value = 0.368), sociocultural and motivation (p value = 0.147), education and motivation (p value = 0.968), information and motivation (p value = 0.296), wife's support and motivation (p value = 0.001). There was no relation between knowledge, education, information source, social and culture with motivation. There was a relation between wife's support and motivation.
Keywords: Education, information source, knowledge, social and culture, wife's support

Abstrak

Program Keluarga Berencana (KB) merupakan salah satu program pembangunan nasional yang sangat penting dalam rangka mewujudkan keluarga Indonesia yang sejahtera. Peran program KB sangat besar pengaruhnya terhadap kesehatan reproduksi seseorang, baik untuk kesehatan reproduksi perempuan maupun kesehatan reproduksi laki-laki. Penelitian ini bertujuan untuk mengetahui faktor-faktor yang berhubungan dengan motivasi laki-laki pasangan usia subur dalam menggunakan kontrasepsi di Desa Bumijo, Kecamatan Jetis, Kota Yogyakarta. Jenis penelitian ini bersifat kuantitatif dengan analisis regresi logistik. Hasil penelitian menunjukkan hubungan pengetahuan dengan motivasi yaitu nilai p = 0,368. Hubungan sosial budaya dengan motivasi yaitu nilai p = 0,147. Hubungan pendidikan dengan motivasi yaitu nilai p = 0,968. Hubungan informasi dengan motivasi yaitu nilai p = 0,296. Hubungan dukungan istri dengan motivasi yaitu nilai p = 0,001. Tidak terdapat hubungan pengetahuan, pendidikan, sumber informasi, sosial budaya dengan motivasi. Terdapat hubungan dukungan istri dengan motivasi.
Kata kunci: Pendidikan, sumber informasi, pengetahuan, sosial dan budaya, dukungan istri

Introduction

Maternal mortality rate (MMR) in the Special Region of Yogyakarta as many as 104 per 100,000 births is lower than national average that reaches 228 per 100,000 births. According to Yogyakarta Antara News, National Family Planning Coordinating Board representative chief said that MMR in the Special Region of Yogyakarta almost reached Millennium Development Goals (MDGs) with a decrease target up to 102 per 100,000 births in 2015.[1]

Family Planning Program is one of very important national development programs in order to embody wealthy Indonesian families. Role of such program has a big influence to a person's reproductive health, both reproductive health of woman and man.[2]

Participants of active man operation method contraceptives included Bantul District (38.54%), Sleman District (22.99%), Gunung Kidul District (14.57%), Kulon Progo District (16.78%), Yogyakarta City (7%).[3]

The low men's participation at contraception is because of two major factors, namely supports, both political, socio-cultural and family that remains low as a result of the lack of knowledge, socio-cultural environment and contraceptive use is a woman's business and responsibility; as well as access, both information access and access to services. Information on men's contraception remains very limited as similar to men's opportunity that is very low in accessing information regarding contraception and reproductive health.[4]

One of the important factors for the success of contraception and reproductive health is men's participation in which a man's involvement in reproductive decision will create a stronger relationship with his wife. The form of men's participation for contraceptive use may be performed directly and indirectly. The men's direct participation is by using one of ways or methods of preventing pregnancy.[5]

Any misleading rumor or assumption about male contraception includes that vasectomy is contraceptive prohibited by religion and will never be advantageous for men to use contraceptives. This is also due to lack of information providing motivations to men for contraceptive use, and the lack of contraceptive service facilities will also hinder men's participation for contraceptive use, so it needs expansion of true information about male contraception through mass media, counseling, seminar.[6]

Social and culture influence someone in using male contraception like myths existing among people, such as the use of condom contraception may cause infections and vasectomy may cause manliness diminished, so the husbands' fear appears as it may impact the marriage.[7]

Knowledge plays a major role in providing the insight toward the establishment of people's attitude to health. Men who do not have adequate knowledge of contracep-

tion will never be motivated to take a role as well as in using contraceptive tools.[8]

Men who get many information about contraception had a tendency to use contraceptives. Information about contraception strongly affects on reproductive behavior and attitude, including men's participation as contraceptive use. Such information can be obtained through television, radio and newspaper as important to form someone's reproductive attitude and behavior.[5]

Support is one of intrinsic factors influencing motivations. By wives' support, men are expected to be able to decide whether or not participating for contraceptive use, which can be completed by deliberation. Suggestion giving within deliberation would arise if knowledge of contraception is understood by every husband and wife. The knowledge is hopefully able to result the feeling of need to follow contraception, so the good wife's support would come as well as the high motivation of husband to be embodied in the form of participation at contraceptive use.

This study aimed to determine factors related to motivations of men of childbearing age for contraceptive use in Bumijo Village, Jetis District, Yogyakarta City.

Method

Subject of this study was reproductive men, with quantitative type of study and cross-sectional design. This study was conducted in Bumijo Village, Jetis Subdistrict, Yogyakarta in 2015. Population was all > 30-year-old reproductive men and had child more than two children as amounted to 269 respondents. Sample size calculation by Slovin formula resulted on 161 subjects. Samples were subjects who met inclusion and exclusion criteria. Inclusion criteria included men at the reproductive age, older than 30 years old, and had two children or more. Samples were taken by using quota sampling technique which was done directly on respondents and if the quota was fulfilled then data collection would be stopped. Variables observed were knowledge, social and culture, source of information and the wife's support as independent variables and men's participation as dependent variable. Bivariate data analysis used chi-square test and multivariate used logistic regression. Data was obtained by home visit and direct interview with questionnaire.

Results

Based on Table 1, most respondents had poor knowledge in men's contraception (60,2%), majority was supported by socioculture level in contraceptive use (73,3%), respondents' education level were mostly low (83,2%), most of them ever had information about men's contraception, and their wive mostly did not give any support for contraceptive use (72%), also men's motivation for contraceptive use was 55,9%.

Table 2 showed that wife's support was the most sig-

nificant variable in relation to men's contraceptive use (p value = 0,001). The more support that wives gave, the more motivation their husbands had for contraceptive use (64,4%), and if wives did not give any support then husbands' motivation would be low (63,8%).

Table 3 showed that wife's support affected husband's motivation for contraceptive use. It was shown in the result of logistic regression of wife's support (p value = 0,001). The strength of assocation could be seen from the value of Exp (B) which was wife's support towards husband's contraceptive use (OR = 3,249) means that husbands who received support from their wives to use contraceptives might affect their motivation three times more than husbands with low support, thus had low motivation. Negative value of constant did not have any meaning both in socio-culture variable and the total constant.

Discussion

The increasing husbands' knowledge of contraception would encourage the husbands to actively participate to use contraceptive tools, so status of the use of contraceptive tools among husbands also increased. A person could take a choice to use contraceptives after passing through some process.[9]

Table 1. Frequency Distribution of Knowledge, Socioculture, Education, Source of Information, Wife's Support, and Motivation

Variable	Category	%
Knowledge	Good	39.8
	Poor	60.2
Socioculture	Supported	73.3
	Did not support	26.7
Education	Low	83.2
	High	16.8
Source of information	Ever	60.2
	Never	39.8
Wife's support	Supported	28.0
	Did not support	72.0
Motivation	High	44.1
	Low	55.9

Husbands' good knowledge of contraception did not automatically make their participation also good. Husbands' participation at contraceptive use still took many considerations of other stuff like gender inequality, etc.[10] Based on results of this study, repondents who had good knowledge not exactly had good motivation because of the respondents' socio-cultural factor that still considered taboo if men used contraceptives, especially vasectomy and considered contraception was the wife's business.

Education was one of determinant factors influencing to acceptance perceptions of any ideas. In general, husband's position as the family head placed him at the central position in term of decision taking. The higher education of husband was proven placing the child's quality as the family's important choice.[11]

In this study, respondents who had good education not exactly had a good knowledge because in decision taking of men to use contraceptives, some wives did not support their husbands due to fear that contraception would drop their husbands' manliness.

Education is the basic level of knowledge owned by a person. Therefore, the high education not exactly guarantees a high knowledge, which results motivation of husbands for contraceptive use is also not exactly good just as condition of husbands' education.[10]

In average, if the wives used contraceptives without any reason, the husbands would not use contraceptives as considering there had been a paradigm among people that contraception was only for women, beside any limitation of contraceptive types that could be used for men.[12]

Based on previous study titled Determining Male Attitude And Behavior on Decision Making And Spousal Communication in Family Planning: A Study Conducted amongst Literate Males of Punjab, India, showed that education and social factors could not change attitude and behavior of individual both in determining choice and deciding contraceptive use among husbands.[13]

Table 2. Relations between Independent Variables and Men's Participation in Using Male Contraceptives

Variable	Category	Motivation				Total	Exp (B)	95% CI	p Value
		Good		Poor					
		n	%	n	%				
Knowledge	Good	31	48.4	33	51.6	64	1.449	0.735-2.855	0.368
	Poor	40	41.2	57	58.8	97			
Socioculture	Support	48	40.7	70	59.3	118	0.525	0.245-1.125	0.147
	Did not support	23	53.5	20	46.5	43			
Education	High	12	44.4	15	55.6	27	1.504	0.600-3.769	0.968
	Low	59	44	75	56	134			
Source of information	Ever	6	43	86	57	151	0.685	0.163-2.883	0.296
	Never	6	60	4	40	10			
Wife's support	Support	29	64.4	16	35.6	45	3.199	1.496-6.838	0.001
	Did not support	42	36.2	74	63.8	116			

Table 3. Relation between Variables and Motivation

Variable	B	SE	p value	Exp(B)	95% CI
Wife's support	1.178	0.370	0.001	3.249	6.703
Socioculture	-0.554	0.371	0.136	0.575	1.190
Constants	-1.081	0.787	0.170	0.339	

Family support refers to a support which is considered useful. Family support is one of very influential factors to positive behavior. Role of family support itself is divided into formal role that is explicit role, such as the role of husband or wife; and role of information, such as direct helps from family.[14]

Wife's support really significantly affected on husbands' motivations for contraceptive use. Thus in taking a choice of contraceptives, there was a deal between husband and wife that played role as reproductive partner. The more wife's support received, the high motivation husband would get for contraceptive use, and otherwise.[2]

The necessity for men to participate at contraception and reproductive health should be based on that men are reproductive and sexual partners, so it is very reasonable if men and women share responsibilities and roles in balance for equal satisfaction as well as prevent reproductive diseases and health complications.[15]

This study was also supported by previous study titled Encouraging Contraceptive Uptake by Motivating Men to Communicate about Family Planning: The Malawi Male Motivator Project that resulted on communication between husband and wife was the most significant factor in the decision-making to use contraceptives. By having good communication between husband and wife, it would result on decision without compulsion in family planning. Most of them decided to use more contraceptives if there was any communication between husband and wife.[16]

The low use of male contraceptives was because the use of male contraceptives, especially vasectomy, is not familiar in which sociocultural environment, communities and families still consider that men's participation at contraceptive use is not necessary. Then it is because of the low knowledge and awareness of men and families on contraceptive use and the limited access to male contraceptive services.[17]

Behavior is influenced by needs and led to the accomplishment of a purpose, so the needs could be met. A person who has motivation will be more passionate about than a person who has not. Thus motivation may strengthen and lead a person's behavior. This could be a factor influencing men in their participation at contraceptive use. Husbands' motivation to participate at contraceptive use is a process occurred in themselves because of any stimulus or encouragement both coming from the inside and the outside to participate at contraceptive use.[18]

Conclusion

In conclusion, there is no relation between knowledge and motivation of reproductive men for contraceptive use, no relation between social and culture with motivation of reproductive men for contraceptive use, no relation between education and motivation of reproductive men for contraceptive use, then no relation between source of information and motivation of reproductive men for contraceptive use. There is a relation between wife's support and motivation of reproductive men for contraceptive use. Most respondents more choose to use condom contraceptive than vasectomy by a reason that condom is safer and has less side effects.

Recommendation

National Family Planning Coordinating Board is hopefully to provide counseling and development of contraception program for men interpersonally, specifically to group of husbands from reproductive couples whose level of knowledge of contraception remains low even to those who refuse to use contraceptive tools. Health workers may give more motivations to reproductive couples for any health development, especially in the establishment of Family Planning that involves men's participation for contraceptive use. Health workers should give adequate information or counselling to wife about contraception that can be used by husband in order to give a positive feedback in husband's motivation for contraceptive use.

References

1. News A. Rendahnya partisipasi pria mengikuti Program KB. 2012 [cited 2016 Feb 4]. Available from: http://nationalgeographic.co.id/berita/20112/02/rendah-partisipasi-pria-mengikuti program-KB.

2. Istiqomah A, Novianti S, Nurlina. Partisipasi pria dalam Keluarga Berencana di Kelurahan Sukamanah Kecamatan Cipedes Kota Tasikmalaya. Jurnal Ilmu Kesehatan Masyarakat Universitas Siliwangi Tasikmalaya. 2012; 1(1): 1-11.

3. Badan Koordinasi Keluarga Berencana Nasional. Peningkatan peran suami dalam pelaksanaan KB di lingkungan keluarganya. Jakarta: BKKBN;

2007.

4. Novianti S, Gustaman RA. Faktor persepsi dan dukungan isteri yang berhubungan dengan partisipasi KB pria. Jurnal Kesehatan Komunitas Indonesia. 2014; 10 (2): 1017–27.

5. Musafaah M. Keikutsertaan pria dalam program keluarga berencana di Indonesia. Kesmas: Jurnal Kesehatan Masyarakat Nasional. 2012; 7(4): 158–61.

6. Rob U, Cernada GP. Managers' attitudes toward involvement of males in Pakistan's family planning program. International Quarterly of Community Health Education. 2004; 22(4): 279–86.

7. Nishtar N, Sami N, Faruqi A, Khowaja S, others. Myths and fallacies about male contraceptive methods: a qualitative study amongst married youth in slums of Karachi, Pakistan. Global Journal of Health Science. 2013; 5(2): 84–93.

8. Anapah Y, Nabuasa E, Nayoan CR. Pengaruh pengetahuan, sikap dan sosial budaya terhadap partisipasi pria dalam menggunakan alat KB di Kelurahan Kefamenanu Selatan Kabupaten Timor Tengah Utara. Media Kesehatan Masyarakat. 2007; 2(1): 44–54.

9. Setyani RA. Hubungan antara tingkat pengetahuan tentang KB pria dengan status penggunaan alat kontrasepsi pada suami. Medika Respati. 2014; 9 (2): 62–71.

10. Maharyani HW, Handayani S. Hubungan karakteristik suami dengan keikutsertaan suami menjadi akseptor keluarga berencana di Wilayah Desa Karangduwur Kecamatan Petanahan Kabupaten Kebumen Jawa Tengah. Jurnal Kesehatan Masyarakat Universitas Ahmad Dahlan (Journal Public Health) 2010; 4 (1): 49–58.

11. Ahmad A. Frekuensi dan determinan kontrasepsi pria di Indonesia. Kesmas: Jurnal Kesehatan Masyarakat Nasional 2009; 3 (5): 201–208.

12. Laila RY. Nilai-nilai budaya dalam memandang metode kontrasepsi medis operasi pria di Kabupaten Demak tahun 2013 [undergraduate thesis]. Semarang: Fakultas Kesehatan Universitas Dian Nuswantoro; 2014.

13. Sood A, Pahwa P. Determining male attitude and behavior on decision making and spousal communication in Family Planning: a study conducted amongst Literate Males Of Punjab, India. International Journal of Current Research and Review. 2014; 6(4): 7–14.

14. Wahyuni N. Hubungan pengetahuan dan sikap akseptor KB pria tentang vasektomi serta dukungan keluarga dengan partisipasi pria dalam vasektomi di Kecamatan Tejakula Kabupaten Buleleng. Pendidikan Kesehatan. 2013; 1(1): 80–91.

15. Desmalita D, Nursal DGA, Suryati S. Beberapa faktor yang berhubungan dengan partisipasi pria sebagai peserta KB di Kelurahan Tembilahan Kota Tahun 2008. Jurnal Kesehatan Masyarakat Andalas. 2009; 3(2): 77–81.

16. Shattuck D, Kerner B, Gilles K, Hartmann M, Ng'ombe T, Guest G. Encouraging contraceptive uptake by motivating men to communicate about family planning: the Malawi male motivator project. American Journal Of Public Health. 2011; 101(6): 1089–95.

17. Rizkitama AA, Indrawanti F. Hubungan pengetahuan, persepsi, sosial budaya dengan peran aktif pria dalam vasektomi di Kecamatan Paguyangan Kabupaten Brebes Tahun 2011-2012. Unnes Journal of Public Health 2015; 4(1): 48–54.

18. Stya Putri MA, Hariyadi S, Prihastuty R. Motivasi Suami mengikuti program KB dengan metode kontrasepsi mantap (vasektomi). Developmental and Clinical Psychology. 2014; 3(1): 35–42.

Coronary Heart Disease Risk Factors among Women Aged Older than 45 Years Old in Makassar

Faktor Risiko Penyakit Jantung Koroner pada Perempuan Usia Lebih dari 45 Tahun di Makassar

Masriadi*, Hasta Handayani Idrus**, Arman***

***Department of Epidemiology, Public Health, Tamalatea School of Health Science, Makassar, Indonesia,
**Faculty of Medicine, Universitas Muslim Indonesia, Makassar, Indonesia, ***Department of Epidemiology,
Faculty of Public Health, Universitas Muslim Indonesia, Makassar, Indonesia**

Abstract

Cardiovascular disease causes 8.6 million deaths of women every year, which is the major cause of death by one-third of all deaths of women in the world. Half of all deaths of women older than 50 years old is caused by cardiovascular and stroke diseases. This study aimed to analyze risk factors related to coronary heart disease among women aged older than 45 years at Dody Sarjoto Makassar Air Force Hospital 2016. The total of sample was 76 consisting of 64 cases of coronary heart disease and 12 non-coronary heart disease. Determination of sample used purposive sampling. Primary data were obtained through interview to respondents using questionnaire and direct interview. Data were analyzed by using contingency correlation coefficient (Exp (B)) test to identify significant relation between dependent and independent variables. Results found were hypertension (Exp (B) = 0.309), obesity (Exp (B) = 0.140), diabetes mellitus (Exp (B) = 0.164) and dyslipidemia (Exp (B) = 0.185), as proven having relation with coronary heart disease among women aged older than 45 years, and the factor which had the most significant relation was dyslipidemia.

Keywords: Cardiovascular disease, diabetes mellitus, dyslipidemia, hypertension, physical activities, smoking

Abstrak

Penyakit kardiovaskuler menyebabkan 8.6 juta kematian pada perempuan setiap tahun, yang merupakan penyebab kematian terbanyak, yaitu sepertiga dari seluruh kematian perempuan di seluruh dunia. Setengah dari seluruh kematian perempuan berusia di atas 50 tahun disebabkan oleh penyakit jantung dan stroke. Penelitian ini bertujuan untuk menganalisis faktor yang berhubungan dengan penyakit jantung koroner pada perempuan usia > 45 tahun di Rumah Sakit TNI AU Dody Sarjoto Makassar. Besar sampel sebanyak 76 sampel yang terdiri dari 64 kasus penyakit jantung koroner dan 12 kasus non penyakit jantung koroner. Penentuan sampel menggunakan metode *purposive sampling.* Data primer diperoleh melalui wawancara terhadap responden dengan menggunakan kuesioner dan wawancara langsung. Data dianalisis menggunakan uji koefisien korelasi kontingensi (Exp (B)) terhadap variabel independen dan dependen. Adapun hasil yang ditemukan adalah obesitas (Exp (B) = 0.140), diabetes mellitus (Exp (B) = 0.164), dan dislipidemia (Exp (B) = 0.185) terbukti memiliki hubungan dengan kejadian penyakit jantung koroner pada perempuan usia > 45 tahun dan faktor yang memiliki hubungan paling besar adalah dislipidemia.

Kata kunci: Penyakit jantung, diabetes melitus, dislipidemia, hipertensi, aktivitas fisik, merokok

Introduction

Cardiovascular disease (CVD) remains the leading cause of death among Europeans and around the world. The Global Burden of Disease study estimated that 29.6% of all deaths worldwide (15,616.1 million deaths) were caused by CVD in 2010, more than all communicable, maternal, neonatal and nutritional disorders combined, and double the number of deaths caused by cancers.[1]

Esselstyn mentioned that mortality caused by coronary heart disease had continuously decreased in industrial countries because level of primary, secondary prevention and medical treatment were relatively high.[2] Ades explained that cardiovascular disease caused 8.6 million deaths of women every year as the major cause of death by one-third of all women in the world. Half of all deaths of women aged older than 50 years are caused by cardiovascular and stroke diseases.[3]

Esselstyn,[2] mentioned that cardiovascular disease took the first place as causes of death in Indonesia. Household health survey periodically conducted by Health Ministry of the Republic of Indonesia showed that cardiovascular disease contributed 19.8% of all causes of death in 2011 and increased to 24.4% in 2011.

Ulfa,[4] explained that in the past, coronary heart disease was considered as a disease which mostly attacked men. Number of deaths showed that at least 250,000 women were died due to coronary heart disease. Study conducted in 2011 showed that 28% of all women older than 50 years old were died because of coronary heart disease, so the disease became the major cause of women's death in such group of age.

The Melbourne Women's Midlife Health Project in cohort study within eight years as conducted by Andreasson reported that among women aged older than 45 years, there was an increase of serum follicle stimulating hormone (FSH) levels more than twice exceeding the average serum FSH levels of 20 – 25-year-old women as well as the decrease of serum inhibin B levels and serum estradiol levels more than 60%, compared to serum inhibin B and serum estradiol levels on 20 – 25-year-old women.[5] The Melbourne Women's Midlife Health Project recommends checking of serum FSH levels, serum estradiol levels and serum inhibin B levels as signs of menopause period.

Christen explained that menopause is when menstrual periods stop permanently at least 12 months, marking the end of a woman's reproductive period.[6] Perimenopause is a period with the range 1 – 2 years before menopause and 1 – 2 years after menopause. Signs and symptoms arised as the result of such transition period are called signs and symptoms of perimenopause consisting of short-term and long-term symptoms.

Dody Sarjoto Air Force Hospital is a hospital owned by Indonesia's Ministry of Defense as managed by Makassar Air Force. Dody Sarjoto Air Force Hospital serves health supports needed in every air force operation and drill including health supports for the execution of emergency, then common, specific and preventive treatment as well as health supports and services for public. The Hospital serves general patients and patients with national health insurance scheme or *BPJS*. The total of coronary heart disease sufferers at Dody Sarjoto Air Force Hospital was 79 patients within January – February 2014. Therefore, it needed study to analyze risk factors of coronary heart disease among women aged older than 45 years at Dody Sarjoto Air Force Hospital 2016.

Method

This study as conducted on January 1st – 30th, 2016 was observational study by cross-sectional approach to analyze risk factors of coronary heart disease among women aged older than 45 years at Dody Sarjoto Air Force Hospital 2016.

Population and samples of study were all > 45-year-old women patients who came for medical treatment at Dody Sarjoto Makassar Air Force Hospital's internal disease clinic on January 1st – 30th, 2016 as many as 76 people both outpatient and hospitalized patients. Samples used in the study were all > 45-year-old women patients who made visits to Dody Sarjoto Makassar Air Force Hospital's internal disease clinic on January 1st – 30th, 2016 as many as 76 people. This study used total sampling technique in which all population were the samples. Data were obtained through interview to respondents by using questionnaire and direct interview.

Data were then analyzed by using contingency correlation coefficient to independent variables (hypertension, diabetes mellitus, dyslipidemia, smoking and physical activities) and dependent variable (coronary heart disease), and then proceed to the analysis by using multivariate logistic regression analysis to determine which variables had the strongest relation.

Results

Total of sample that would be analyzed in this study was 76 samples. Based on bivariate analysis in Table 1, there were four variables that had significant relation with coronary heart disease (p value < 0.05). There were hypertension, diabetes mellitus, dylipidemia and obesity.

Selection of the variables used multivariate analysis by using multiple logistic regression method Backward Likelihood Ratio. The results of data processing candidate variables were shown in the following table.

Variables hypertension, diabetes mellitus, dyslipidemia and obesity were included in the multivariate analysis for p < 0.025 (Table 2). After the selection of candidates, multivariate analysis performed multivariate

Table 1. Relation between Independent and Dependent Variables

Variable	CHD Status				p Value
	CHD		Not CHD		
	N	%	N	%	
Hypertension	49	76.6	5	41.7	5.983
Non-hypertension	15	23.4	7	58.3	0.014
Diabetes mellitus	47	73.4	5	41.7	4.712
Non-diabetes mellitus	17	26.6	7	58.3	0.030
Dyslipidemia	52	81.3	6	50	5.460
Non-dyslipidemia	12	18.7	6	50	0.019
Obesity	52	81.3	5	41.7	8.444
Non-obesity	12	18.7	7	58.8	0.040
Smoking	8	12.5	4	33.3	3.299
Non-smoking	56	87.5	8	66.7	0.069
Regular physical activities	11	17.2	1	8.3	0.596
Non-regular physical activities	53	82.8	11	91.7	0.440

Table 2. Results of the Multivariate Candidate Selection

Variable	Score	Df	p
Hypertension	5.983	1	0.014
Diabetes mellitus	4.721	1	0.03
Dyslipidemia	5.460	1	0.019
Obesity	8.444	1	0.04

Table 3. Modelling Stage 1

	Variable	B	Coef.	Exp (B)	95% CI	
					Lower	Upper
Step 1	Hypertension	-1.174	-1.174	0.309	0.055	1.726
	Diabetes mellitus	-1.667	-1.667	0.189	0.039	0.908
	Dyslipidemia	-1.915	-1.915	0.147	0.028	0.773
	Obesity	-1.451	-1.451	0.234	0.044	1.251
	Constant	2.227	2.227	9.275		
Step 2	Diabetes mellitus	-1.806	-1.806	0.164	0.035	0.762
	Dyslipidemia	-1.689	-1.689	0.185	0.040	0.853
	Obesity	-1.965	-1.965	0.140	0.032	0.624
	Constant	1.736	1.736	5.675		

analysis to get a multivariate model. Following multivariate model first.

Results of analysis showed that variable which had a very strong relation was variable dyslipidemia (Exp (B) = 0.185) (Table 3).

Discussion

Based on results of study, there was a significant relation between hypertension and coronary heart disease among women aged older than 45 years (p = 0.014). The result was in accordance with finding at field where respondents who suffered from coronary heart disease and hypertension had larger number than respondents who did not suffer from hypertension.

Such case was supported by theory stating that con-

tinuous high blood pressure could damage arterial blood vessels gradually. The artery was hardened because of fat accumulation in the artery wall, so constricted lumen in blood vessels that would make bloodstream hindered.

If coronary artery vessels were infected, it would result the incidence of coronary heart disease. The increase of systemic blood pressure due to hypertension enhanced resistance against blood pumping from the left ventricle, so the cardiac workload increased. According to American Heart Association (AHA), risk of cardiovascular disease increases in line with the increase of blood pressure, in which the systolic blood pressure 130 – 139 mmHg and diastolic 85 – 89 mmHg will increase the risk of cardiovascular and blood vessel diseases twice compared to blood pressure less than 120/80 mmHg.[7] The increase of blood pressure may raise atherosclerosis incidence that is the cause of coronary heart disease.

The results were supported by Burch,[8] explaining that of 300,000 number of population at the age of 45 – 65 years that were treated at elderly unit, prevalence of hypertension was obtained 32% when starting treated. Boedhi,[9] explained that hypertension incidence at elderly age was because the decrease of renin levels as the result of the decrease of nephron number due to aging process, so it caused the continuously ongoing vitiosus circulus. Moreover, at elderly age, the lowering of elasticity on peripheral blood vessels occurred, which caused an increase of resistance of peripheral blood vessels apparently resulting systolic hypertension.

Results of study conducted by Ismail,[10] on hospitalized patients of coronary heart disease and hypertension who were positive suffering from coronary heart disease and having hypertension records were found by 32%. The result of chi-square test showed significant relation between incidence of coronary heart disease and hypertension level (p = 0.0001 < p = 0.1).

That was contrary to results of study conducted by Jian Liu,[11] in which the result of chi-square showed p value = 0.101 which means that no significant relation was found between hypertension and coronary heart disease incidence, yet according to results obtained quantitatively, of all samples with hypertension, 72.5% suffered from coronary heart disease. Such result was also contrary to results of study conducted by Sulistyo,[12] that proved no significant relation of hypertension to coronary heart disease incidence.

Results of this study showed a significant relation between diabetes mellitus and coronary heart disease incidence among > 45-year-old women (p value = 0.03). That was in accordance with finding at field where respondents who suffered from coronary heart disease and diabetes mellitus had larger number than respondents who did not suffer from diabetes mellitus. This was supported by theory stating that diabetes mellitus, name-

ly high glucose levels in blood tend to increase cholesterol and triglyceride levels. The increase of diabetes risk was caused by lipid disorder. Mechanism was not clear yet, but there occurred an increase of type IV hyperlipidemia and hypertriglyceride, the form of abnormal platelet, so it triggered coronary heart disease incidence.

Burch,[8] mentioned that one of indicators of the high blood glucose levels in diabetes mellitus was if the blood glucose when reaching > 220 mg/dL and there would be emerged process of membran basalis thickening from capillary and coronary artery blood vessels, so constriction of bloodstream to heart might occur. The disease could be handled by maintaining blood glucose levels to stay normal. The incidence of suffering from coronary heart disease was increased by two to four times higher among diabetes-infected people. People with diabetes tend to quickly suffer from degeneration of tissue and dysfunction of endothelium.

Sulistyo,[12] proved a significant relation was found between diabetes mellitus and incidence of coronary heart disease. Furthermore, case control study conducted by Mamat,[13] obtained a proportion of respondents with fasting blood glucose > 126 mg/dL on the case group was 47.5% and 51.3% for the control group. Results of bivariate analysis showed a significant relation between fasting blood glucose levels and coronary heart disease (p = 0.0001).

Results of study found a significant relation between diabetes mellitus and coronary heart disease among > 45-year-old women. Insulin resistance syndrom at elderly age, diabetes was at risk to suffer from coronary heart disease in the future and the decrease of tolerance of glucose at elderly age in relation to the lowering of peripheral cell sensitivity to insulin effect (insulin resistance). There were also secondary factors, namely the change of lifestyle and the rise of increasing atherosclerosis as marked by hyperglycemia, yet the impact of its complications was different.

That was in line with study conducted by Kennel,[14] which found results that of 65 respondents with diabetes mellitus, 69.7% (23 people) suffered from coronary heart disease. According to Amsterdam,[15] the high blood glucose levels, diabetes mellitus proven had a relation with the incidence of coronary heart disease by using 346 respondents.

Lewis,[16] explained that coronary heart disease incidence increased twice to four times higher among diabetes mellitus-infected people because a person with diabetes mellitus disease more quickly suffered from malfunction of blood vessels and the increasing risk of heart attacks.[16] Diabetes mellitus would raise the process of membran basalis thickening from capillaries and coronary artery blood vessels, so the constriction of bloodstream to the heart occurred. This was not in line with

study conducted by Isabelle,[17] that found no significant relation between diabetes mellitus and coronary heart disease incidence (p = 0.161).

Results of study showed a significant relation between dyslipidemia and coronary heart disease incidence and the most influencing variable to dependent variable based on the result of multivariate analysis as seen from exp (B) was dyslipidemia.

That was in accordance with finding at field where respondents who suffered from coronary heart disease and dyslipidemia had larger number than respondents who did not suffer from dyslipidemia. Results of observation through patients' medical records showed that most respondents had low density lipropotein (LDL) levels > 130 mg/dL. In line with Gobel,[18] dyslipidemia had higher risk (OR= 1.4) to coronary heart disease mortality than patient without dyslipidemia.

Most respondents admitted that they came to hospital if they suffered from progressive chest pain. The most prominent checkup result on blood chemical checkup result was the increasing LDL level as quite significant over 13 mg/dl. Therefore, dyslipidemia was convincingly as the factor most related to coronary heart disease incidence among > 45-year-old women.

It proved that the high LDL cholesterol level had an important role in the incidence of coronary heart disease and there was reversed relation between high density lipoprotein (HDL) and LDL. The increasing level of fat correlated with atherosclerosis process. Factors related from the factor blood lipid were total of plasma cholesterol > 200 mg/dL, LDL > 130 mg/dL, triglyceride > 150 mg/dL, HDL < 40 mg/dL on men.[16]

The high cholesterol levels could be accumulated in the artery vessels, which caused the constriction and hardening, well-known as atherosclerosis or plaque. As a result of the increasing cardiac workload and hypertrophy, thus the heart's need of blood (oxygen) increased and caused dyslipidemia incidence believed as the major factor that could be modified for development and progressive change for coronary heart disease incidence. Cholesterol was transported in blood in the form of lipoprotein consisting of LDL (75%) and HDL (20%). The low HDL cholesterol level had a good role on coronary heart disease and there was reversed relation between HDL levels and coronary heart disease incidence.[16]

Fajri,[19] conducted study on 300 respondents in which the results showed that related factors proven influential were total cholesterol levels (p = 0.027), LDL (p = 0.010) and hypertension (p = 0.009). Between the total cholesterol levels, HDL cholesterol levels, LDL cholesterol levels, triglyceride levels, hypertension and diabetes mellitus, there could be seen that most frequency distribution was found on the low HDL level and hypertension.

Based on study results, there was a significant relation between obesity and coronary heart disease incidence among > 45-year-old women (p value = 0.04). That was in accordance with finding at field where the number of patient suffering from coronary heart disease and obesity had the larger number compared to those not suffering from obesity.

Common people assumed that having fat body showed the high social level in the eyes of other people as this situation generally occurred among respondents whom this study met. Respondents were very proud if they had fat bodies and exceeding body mass index. Then they tried to maintain their fat body shape to make other people impressed that they had quite a lot of money to pay anything they always wanted to consume.

A theory stated that coronary heart disease and other metabolic diseases well known as metabolic syndrome correlated with obesity. Aryana,[20] explained that prevalence of obesity on the subject with coronary heart disease among > 45-year-old women was found very high (51.1%) compared to the prior study. The high obesity prevalence that remained on > 45-year-old women would lead to a consequence of the increasing risk of coronary heart disease incidence. That was related to two mechanisms, namely direct mechanism through protein metabolic effect secreted from fatty tissue such as interleukin (IL) 1, IL 6, TNF, adiponectin and many other proteins to blood vessel endothelium and indirect effect as the impact of other factors which emerged as coronary heart disease risks as a result of the central obesity.

Such result of study was in accordance with theory stating that obesity would increase the heart's workload and especially fat accumulated in the central part of body would increase risk of coronary heart disease. Mamat,[13] stated that coronary heart disease was often suffered by people who had body mass index > 25 kg/m compared to those who had body mass index < 25 kg/m.

Folsom,[21] conducted a study on adult population in rural and urban areas in Bali which resulted that body mass index was very good predictor of metabolic syndrom in which body mass index was strongly related to other metabolic syndrome components. Body mass index was much better if used as predictor of metabolic syndrome compared to waist circumference. Study with elderly population of coronary heart disease found that body mass index was not related to other components of metabolic syndrom, but strongly related to plasma adiponectin. Central obesity had prevalence ratio five times higher to obtain hypoadiponectinemia than non-central obesity.

That was inversely with study of Gotto,[22] which resulted that the high body mass index did not have significant prediction among all cases of coronary heart disease and found that relative risk of cardiovascular disease related to an act of increasing body weight was higher between the age of 45 – 60 years.

Then results of study found no significant relation between smoking records and coronary heart disease among > 45-year-old women (p value = 0.069). Of 76 respondents, 64 respondents (87.5%) did not smoke and 9 respondents (12.5%) did smoke. It was assumed that the high number of respondents who did not smoke at Dody Sarjoto Makassar Air Force Hospital was because all respondents were women and a few of them had smoking records.

Respondents who did not have smoking records in results of questionnaire also admitted they were rarely exposed to smoke, so that coronary heart disease was unlikely caused by substances contained in cigarette. Results of questionnaire interview to the nine respondents who did smoke showed that cigarettes they consumed were cigarettes without filter they made by themselves from cigarette paper filled with tobacco and they consumed after having breakfast, lunch and dinner. Number of cigarette they smoked in a day was three cigarettes. Results of study showed no significant relation was found between physical activities and coronary heart disease among women aged older than 45 years because body protection system, well known as *makrofag* or part of leukocytes that digest all foreign invaders potentially damaging cells including poison contained in the cigarette itself.

Burch,[8] stated that smoking was risky resulting coronary heart disease twofold if compared to those who did not smoke. Effect of nicotine in cigarette caused the release of catecholamine by autonomic nervous system that caused injury on *tunika intima*, also this was not in accordance with study conducted by Mamat,[13] stating that there was a relation between smoking records and coronary heart disease incidence (p = 0.009).

That could have relation with incidence of atherosclerosis (artery wall calcification or thickening) and led to artery wall damage. Moreover, results of study conducted by Devaranavadgi,[23] showed that there were four respondents (12.9%) who did not have smoking habit, but suffered from coronary heart disease. That was possibly caused by other factors which affected on coronary heart disease, such as hypertension and high level of fat.

Jalowiec,[24] mentioned that hypertension, high level of fat and coronary heart disease were also influenced by other factors, such as age, sex, genetic, lack of activities and obesity. That was because smokers had different smoking intensity. A person who had a risk to suffer from coronary heart disease could be seen from smoking duration and cigarettes consumed per day. Isabelle,[17] mentioned that people who smoked in term < 10 years with number of cigarette consumed less than one pack (15 cigarettes) per day had lower risk to suffer from coronary

heart disease than people who smoked ≥ 10 years with number of cigarette consumed more than one pack (15 cigarettes) per day.

No significant relation between physical activities and coronary heart disease among > 45-year-old women was because of physical activities addressed by this study, namely physical exercise (sports) for 30 minutes every day within 3 – 4 days in a week, so a maximum result could be reached. Physical activity programs should be designed to improve physical strength by using FITT formula namely frequency (how often), intensity (how long), type (isotonic) and time (how long). American College of Cardiology recommended all Americans to do any physical activities for 30 minutes every day.

That was not in line with study conducted by Jaloweic,[24] which resulted that physical activities could increase HDL levels in blood and fix coronary collateral, so the risk of coronary heart disease could be reduced. Physical activities could lose body weight, so excessive fat decreased together with the decrease of LDL cholesterol. That was also inappropriate with results of study conducted by Jian Liu,[11] stating that there was a significant relation between physical activities/sports and coronary heart disease incidence. Sports could help to lose body weight, control cholesterol levels and drop blood pressure that were other factors related to coronary heart disease.

Such result of study was not in line with study conducted by Fajri,[19] that people who often did physical activities in their daily activities compared to people who rarely did physical activities had a risk of suffering from coronary heart disease 1 : 1 or equal.

Conclusion

In conclusion, based on the results of study concerning on factors related to coronary heart disease among women aged older than 45 years at Dody Sarjoto Makassar Air Force Hospital, factors that have relation with coronary heart disease among women aged older than 45 years are obesity, diabetes mellitus and dyslipidemia. Meanwhile, factors that do not have relation with coronary heart disease among women aged older than 45 years are hypertension, smoking and physical activities. Then the factor most related to coronary heart disease incidence women aged older than 45 years is dyslipidemia.

Recommendation

Based on the results of study concerning factors related to coronary heart disease among women aged older than 45 years at Dody Sarjoto Makassar Air Force Hospital, it is recommended to control blood pressure, blood glucose and body mass index at integrated healthcare service; maintain eating pattern to avoid hypertension and obesity; consume lower cholesterol food name-

ly food that are cooked, not fried, because fats contained in cooking oil should be reduced even though there is a lower cholesterol label written on the cooking oil packaging; and provide health counseling concerning on dangers of obesity because there are still many people who have understanding that having fat body is an indicator of wealth.

References

1. Nichols M, Townsend N, Scarborough P, Rayner M. Cardiovascular disease in Europe – epidemiological update. European Heart Journal. 2013; 34: 3028-34.

2. Esselstyn Jr CB, Gendy G, Doyle J, Golubic M, Roizen MF. A way to reverse CAD? RoizenTough current medical and surgical treatments manage coronary artery disease, they do little to prevent or stop it. Nutritional intervention, as shown in our study and others, has halted and even reversed CAD. Journal of Family Practice. 2014; 63: 356-64b.

3. Ades PA, Cardiac rehabilitation and secondary prevention of coronary heart disease. The New England of Journal Medicine. 2011; 345: 892-902.

4. Ulfa A. Gejala awal dan deteksi dini penyakit jantung coroner [online]. Jakarta: Artikel Ilmiah Pd-PERSI; 2012. Available from: http://carajantungsehat.blogspot.co.id/2011/05/gejala-awal-penyakit-jantung.html.

5. Andreasson S, Allebeck P, Romelsjo A. Alcohol and mortality among young man. British Medical Journal. 2010; 296: 1021-5.

6. Christen WG, Anjani UA, Glyn RJ, Hennekens CH. Blood levels of homocysteine and increased risk of cardiovascular disease-causal or causal. Archives of Internal Medicine. 2013; 160: 422.

7. American Heart Association (AHA)–Scientific Position. Risk factors and coronary heart disease. AHA Scientific Position. 2012: 24; 1-3.

8. Burch PRJ. Coronary disease: Risk factors, age, and time. American Heart Journal. 2011; 97: 415-9.

9. Boedhi DR, Kris-Pranarka, Sutrisno B. Survei penyakit Jantung pada Orang Usia Lanjut, Bunga Rampai Karangan Ilmiah. Jakarta: Balai Penerbit FK UI; 2009.

10. Ismail J, Jafar TH, Jafari FH, White F, Faruqui AM, Chaturvedi N. Risk factors for non-fatal myocardial infarction in young south asian adults. Heart on Line. 2014; 90: 259-63.

11. Jian Liu, Sempos C, Donahue RP. Joint distribution of non-HDL and LDL cholesterol and coronary heartdisease risk prediction among individuals with and without diabetes. Diabetes Care. 2014; 28: 1916-21.

12. Sulistyo A, Ririn N. Faktor yang berhubungan kejadian PJK pada kelompok muda [postgraduate thesis]. Surabaya: Universitas Muhamadiyah Ponogoro; 2012.

13. Mamat S. Faktor-faktor yang berhubungan yang berpengaruh terhadap kejadian penyakit jantung koroner pada kelompok usia < 45 tahun [postgraduate thesis]. Semarang: Universitas Diponegoro; 2011.

14. Kennel W, McGee D, Castelli W. Latest perspectives on cigarette smoking and cardiovascular disease, The Framingham Study. Journal of Cardial Rehabililtation. 2014; 59: 750-5.

15. Amsterdam EA, Wenger Nk, Brindis RG, Casey DE, Ganiats Tg, Holmes DR, et al. A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines, AHA/ACC NSTE-ACS Guideline. Journal of the American Collage of Cardiology. 2014; 64

(24): e139-228.

16. Lewis SL, Heitkemper MM, Dirken SR, O'Brien PG, Bucher L. Assesment and Management of Clinical Problem. 7th ed. St Louis, Mosby: Elsevier; 2007.

17. Isabelle LH, Mariane Z, Laurent M. Relation of hyperglycemia to ST-Segment resolution after reperfusion for acute myocardial infarction (from observatoire des infarctus de Cote-d'Or survey [RICO]. American Journal Cardiology. 2011; 98: 167-71.

18. Gobel FA, Mahkota R. Faktor-faktor yang mempengaruhi kematian pasien penyakit jantung koroner di Pusat Jantung Nasional Harapan Kita tahun 2004. Kesmas: Jurnal Kesehatan Masyarakat Nasional. 2006; 1 (3): 99-105.

19. Fajri A. Hubungan faktor yang berhubungan dengan kejadian penyakit jantung koroner pada karyawan PT. Pupuk Kalimantan Timur [post-graduate thesis]. Surakarta: Universitas Muhammadiyah Surakarta; 2011.

20. Aryana IGPS, Kuswardhani RAT, Suastika K, Santoso A. Korelasi Antara Obesitas Sentral Dengan Adiponektin Pada Lansia Dengan Penyakit Jantung Koroner. Jurnal Penyakit Dalam. 2011; 12 (2): 81-6

21. Folsom AR, A prospective study of coronary heart disease in relation to fasting insulin, glucose and diabetes. Diabetes Care. 2011; 20: 935-42.

22. Gotto. Observational epidemiology and risk factor in manual of lipid disorders. 3rd Edition. Philadelphia: Lippincott Williams & Wilkins; 2013.

23. Devaranavadgi BB, Aski BS, Kashinath RT, Hundekari IA. Effect of cigarette smoking on blood lipids–A study in Belgaum, Northern Karnataka, India. Global Journal of Medical Research. 2013; 12: 6.

24. Jalowiec DA, Hill JA, Myocardial infarction in the young and in woman, Cardiovascular Clinics. 2011; 20: 197-206.

Basis for Development of Local Public Service Primary Health Care Business Strategic Plan in Gianyar District, Bali

Dasar Pengembangan Rencana Strategis Bisnis Puskesmas Berstatus Badan Layanan Umum Daerah di Kabupaten Gianyar, Bali

Putu Ayu Indrayathi, Luh Putu Sinthya Ulandari

School of Public Health, Faculty of Medicine, Universitas Udayana, Denpasar, Indonesia

Abstract

Primary health care as Local Public Service Entity needs to make the right business strategic plan. Arranging business plan needs to pay attention to its competitors operating around its working area. This study aimed to determine internal and external environmental factors in Ubud 1 and Tegallalang 1 Primary Health Care and develop model of business strategic plan development in both primary health cares with Local Public Service Entity status. This study was descriptive explorative conducted in 2014. Data were collected through questionnaires, and documentation study. Samples were determined purposively or taken non-proportionally, consisting of Ubud 1 and Tegallalang 1 Primary Health Care heads and staff. Data were analyzed by descriptive quantitative analysis. Results of internal and external factor analysis in both primary health cares showed similar findings. Most indicators of internal variable were strength, only quantities of medical and non-medical workers were the weaknesses in program development. Meanwhile, external factor analysis showed that most indicators of external variable were opportunities and it was only people's lifestyle toward environment as the threat in program development. In conclusion, the development strategic position in Ubud 1 Tegallalang 1 was growth strategy.

Keywords: Business strategic plan, local public service entity, primary health care, SWOT analysis

Abstrak

Puskesmas yang berbentuk Badan Layanan Umum Daerah (BLUD) perlu membuat rencana strategi bisnis yang tepat. Penyusunan rencana strategi bisnis perlu memerhatikan pesaing yang beroperasi di sekitar wilayah kerja. Penelitian ini bertujuan untuk mempelajari aspek lingkungan internal dan eksternal di Puskesmas Ubud 1 dan Tegallalang 1 serta mengembangkan model pengembangan rencana strategi bisnis di kedua puskesmas yang berstatus BLUD tersebut. Penelitian ini merupakan penelitian deskriptif eksploratif yang dilakukan pada tahun 2014. Data dikumpulkan melalui penyebaran kuesioner dan studi dokumentasi. Sampel penelitian ditentukan secara purposif dan diambil secara non proporsional, terdiri dari kepala dan staf Puskesmas Ubud 1 dan Tegallalang 1. Data dianalisis secara deskriptif kuantitatif. Hasil analisis faktor internal dan eksternal kedua puskesmas menunjukkan hasil yang sama. Sebagian besar indikator variabel internal merupakan kekuatan, hanya kuantitas tenaga kerja bidang medis dan nonmedis sebagai kelemahan dalam pengembangan program. Sedangkan hasil analisis faktor eksternal menunjukkan sebagian besar indikator variabel eksternal merupakan peluang dan hanya perilaku masyarakat terhadap lingkungan yang merupakan ancaman dalam pengembangan program. Sebagai kesimpulan, posisi strategis pengembangan di Puskesmas Ubud 1 dan Tegallalang 1 adalah strategi pertumbuhan.

Kata kunci: Rencana strategi bisnis, badan layanan umum daerah, puskesmas, analisis *SWOT*

Introduction

Primary health care is responsible of organizing the first level of (primary) health care within the National Health System through individual health as well as public health measures. To meet this responsibility, the primary health cares carry out several attempts, such as basic health care services and health development programs to provide comprehensive health care services to all communities in its working area.[1]

In the autonomy era, Gianyar District Government has a moral responsibility to develop more affordable basic health services for the people, in terms of cost and accessibility to health centers. In increasing affordability to basic health services for public, some non-inpatient care health centers were upgraded to inpatient care health centers. Furthermore, to improve services for the public, the local government establishes it in every health center that aims to provide financial flexibility, human resource management, procurement of goods and services that will implicate towards flexibility in implementing innovative programs according to community needs.

Complaints toward the low quality of services at primary health care is one of reasons for establishing primary health cares with Local Public Service Entity status in Gianyar District.[2] Implementation of Local Public Service Entity in Gianyar District is the real manifestation of the government's attention in improving service quality of primary health care to public.[3] Of 13 primary health cares in Gianyar District, four are primary health cares with inpatient care that provide 24-hour services. The previous studies found that the patients' perception of 'direct evidence' quality dimensions, such as alertness, confidence and attention were perceived as 'bad' and only reliability dimension that is perceived as 'good'.[4]

In supporting the implementation of primary health care with Local Public Service Entity status, a proper business strategic plan is needed for optimal implementation and a review towards comprehensive health service strategy is also needed to strengthen and maintain achievements through any prioritized programs.[5] Planning the business strategy also needs to pay attention to the rivals, the private health care providers operating around the same working area.

The previous studies found that Ubud 1 Primary Health Care had a very high competition density. Most healthcare facility competitors are concentrated in Ubud area, which is one of famous tourist areas in Bali, in contrast with Tegallantang 1 Primary Health Care where the number of competitor are very little.[6] The competitors of Tegallalang 1 Primary Health Care are only one doctor and one midwife in private practice located approximately 1.5 kilometer from the primary health care. In Ubud 1 Primary Health Care, there are approximately 11 health facility competitors consisting of clinics, doctors and midwives where the closest distance is approximately 500 meter.[6]

This study was conducted to determine internal and external environments in both Tegallalang 1 and Ubud 1 Primary Health Care that had different number of competitors, and to determine strategic business development model (grand strategy) for each primary health care.

Method

In describing the internal and external environmental aspects of the organization, this study tried to identify strengths, weaknesses, opportunities and threats (SWOT) to be considered in determining the appropriate and ideal strategy for the organization. The study was conducted from July to December 2014 in Gianyar District because this district had implemented two primary health care revitalization policies; local public service entity and 24-hour health center.

Data were collected using survey, questionnaire and documentation study. Population of this study was all Public Service Entity primary health cares' inpatients in Gianyar District. Study samples/informants were determined purposively and non-proportional. They were heads and staff of primary health cares, such as the head of administration and the head of primary health care program in Ubud 1 and Tegallalalng 1 Primary Health Cares. Quantitative data were analyzed descriptively.

Descriptive analysis was used to explain the respondents' scores of the internal factor indicators (strengths and weaknesses) and external factor (opportunities and threats) which had previously been analyzed quantitatively by calculating the average value. Furthermore, to formulate appropriate alternative strategy based on internal strengths and weaknesses and external opportunities and threats, SWOT matrix was used. In determining the strategic position as a grand strategy for the development of Tegallalang 1 and Ubud 1 Primary Health Care, an internal-external analysis matrix analysis was used.

Results

Identification of Internal Factors' Strengths and Weaknesses

Table 1 showed that the average internal environmental assessment rating in Ubud 1 Primary Health Care was good. Indicator of quantity of medical worker included in the criteria was bad with value rated 1.8, and indicator quantity of non-medical workforce is very bad rated 1.6. This may be a weakness in the Ubud 1 health center care in Gianyar.

Table 2 showed that the average internal environment assessment toward Tegallalang 1 Primary Health Care was categorized as 'good'. However, there was 'bad' result indicating the human resource variable, consisting of quantity of medical field worker rated 2.3 and quantity of non-medical worker rated 2.2.

Table 1. Internal Factor Analysis Summary (IFAS) of Ubud 1 Primary Health Care

Variabel	Indicator	Value	Rating	Rating Score	Criteria
Human resource	Quantity of medical worker	0.053	1.8	0.0954	Bad
	Quantity of non-medical worker	0.045	1.6	0.064	Very bad
	Quality of medical worker	0.058	3	0.174	Good
	Quality of non-medical worker	0.045	2.7	0.1215	Good
	Qualification of medical worker	0.055	3	0.165	Good
	Quality of non-medical worker	0.038	2.7	0.1026	Good
	Health care organization structure	0.052	2.7	0.1404	Good
Operational	Proper infrastructure	0.051	2.6	0.1326	Good
	Proper medical equipments	0.051	2.8	0.1428	Good
	Proper medical tools	0.048	2.9	0.1392	Good
Financial	Proper medical tools	0.043	3.1	0.1333	Good
	Financial audit system	0.052	3	0.156	Good
	Funding system	0.052	3	0.156	Good
Marketing	Drug availability	0.048	2.5	0.12	Good
	Drug quality	0.048	2.9	0.1392	Good
	Service quality	0.052	3	0.156	Good
	Tariff pattern	0.048	3.1	0.1488	Good
	Health care location	0.059	3.2	0.1888	Good
	Public relation	0.058	3.1	0.1798	Good
Total		**1**	**71.4**	**2.6554**	

Table 2. Internal Factor Analysis Summary (IFAS) of Tegallalang 1 Primary Health Care

Variable	Indicator	Value	Rating	Rating Score	Criteria
Human resource	Quantity of medical worker	0.053	2.3	0.1219	Bad
	Quantity of non-medical worker	0.04	2.2	0.088	Bad
	Quality of medical worker	0.058	3.2	0.1856	Good
	Quantity of non-medical worker	0.045	2.6	0.117	Good
	Qualification of medical worker	0.055	3.1	0.1705	Good
	Qualification of non- medical worker	0.038	2.4	0.0912	Good
	Health care organization structure	0.052	3	0.156	Good
Operational	Proper infrastructure	0.051	3	0.153	Good
	Proper medical equipment	0.051	2.7	0.1377	Good
	Proper medical tools	0.048	3	0.144	Good
Finance	Proper medical tools	0.043	3.1	0.1376	Good
	Financial audit system	0.052	3	0.156	Good
	Funding system	0.052	3	0.1716	Good
Marketing	Drug availability	0.048	2.5	0.1248	Good
	Drug quality	0.048	2.9	0.1392	Good
	Service quality	0.052	3	0.156	Good
	Tariff pattern	0.048	3.1	0.144	Good
	Health care location	0.059	3.2	0.1947	Good
	Public relation	0.058	3.1	0.1856	Good
Total		**1**	**44.2**	**2.9459**	

Table 1 and Table 2 showed the value of large or small weighting, since it indicated the relative significance of a factor to the success of an organization. The greatest weight (value) in marketing variable were the location of health care (0059), relation with the public (0058), meanwhile the greatest weight (value) in the human resources variable was quality of medical worker (0058). These figures showed that these indicators were important and strategic in the service development program.

Identification of External Factors: Opportunities and Threats

Based on the analysis of external factors in Ubud 1 Primary Health Care (Table 3), most external factor in-dicators reflected a good external environment. Transportation and public education indicators in Gianyar had the highest rating value that was 3.2 with good criteria. While the indicator of people's behavior towards the environment had the lowest rating value, that was 2.3 with bad criteria.

Table 4 showed the analysis result of external conditions of Tegallalang 1 Primary Health Care in which transportation had the highest rating value that was 3.1 with good criteria and people's behavior towards the environment as the lowest rating indicator that was 2.3 with bad criteria.

Table 3 and Table 4 that mentioned the weighting of

Table 3. External Factor Analysis Summary (EFAS) of Ubud 1 Primary Health Care

Variable	Indicator	Value	Rating	Rating Score	Criteria
Economy	Drug price level	0.07	2.7	0.189	Good
	Public purchasing power	0.066	2.9	0.1914	Good
	Transportation facility	0.066	3.2	0.2112	Good
	Medical worker availability	0.066	2.6	0.1716	Good
	Local government's health budget	0.07	3	0.21	Good
Legal	Public health law implementation	0.07	2.9	0.203	Good
	Local public health agency health care legal protection	0.066	2.8	0.1848	Good
	Local public health entity health care implementation	0.07	3	0.21	Good
Socio culture	Education level of Gianyar people	0.07	3.2	0.224	Good
	Population of Gianyar	0.063	3	0.189	Good
	People's behavior towards environment	0.055	2.3	0.1265	Bad
Development of health science technology		0.066	3	0.198	Good
	Health equipment technology development	0.07	3	0.21	Good
	Information technology development	0.066	3	0.198	Good
	Communication technology development	0.063	3	0.189	Good
Total		**1**	**43.6**	**2.9055**	

Table 4. External Factor Analysis Summary (EFAS) of Tegallalang 1 Primary Health Care

Variable	Indicator	Value	Rating	Rating Score	Criteria
Economy	Drug price level	0.07	3	0.21	Good
	Public purchasing power	0.066	3	0.198	Good
	Transportation facility	0.066	3.1	0.2046	Good
	Medical worker availability	0.066	2.8	0.1848	Good
	Local goverment's health budget	0.07	3	0.21	Good
Legal	Public health law system implementation	0.07	3	0.21	Good
	Local public health agency health center legal protection	0.066	3	0.198	Good
	Local public health entity health care implementation	0.07	3	0.21	Good
Socio culture	Education level of Gianyar people	0.07	3	0.21	Good
	Population of Gianyar	0.063	3	0.189	Good
	People's behavior towards environment	0.055	2.3	0.1265	Bad
	Health science development	0.066	3	0.198	Good
Technology	Health equipment technology development	0.07	3	0.21	Good
	Information technology development	0.066	3	0.198	Good
	Communication technology developmnet	0.063	3	0.189	Good
Total		**1**	**44.2**	**2.9459**	

indicators showed that cost of medicines, local government's health budget, the implementation of local public entity health care's legal protection, the implementation of local public entity health care's law, Gianyar people's education level and medical technology development had higher weight values (0.07) than other external variable indicators. These indicated that the indicators had higher role than other indicators for both health cares in developing priority programs.

Internal-External Matrix

As shown in Table 1 and Table 3, the total weighted value of Ubud 1 Primary Health Care for the Internal Factor Analysis Summary (IFAS) score was 2.6554 and External Factor Analysis Summary (EFAS) score was 2.9005. These scores were not much different from the weighted value of Tegallantang 1 Primary Health Care as seen in Table 2 and Table 4. The value of IFAS score was 2.9459 and EFAS score was 2.9459. The position of

Tegallalang 1 and Ubud 1 Primary Health Care were presented in the following Figure 1.

In Figure 1, the position of Tegallalang 1 and Ubud 1 Primary Health Care were in the quadrant V (Growth) with a horizontal integration concentration. Hence, the grand strategy that could be implemented by both Tegallalang 1 and Ubud 1 Primary Health Care were increasing service variance and health care service quality.

SWOT Matrix

The SWOT matrix (Table 5) provided the right alternative strategy for Tegallalang 1 and Ubud 1 Primary Health Care, considering the similar position indicator in both primary health cares. This matrix described the overview of the overall strategy of Tegallalang 1 and Ubud 1 Primary Health Care based on internal strengths and weaknesses as well as external opportunities and threats.

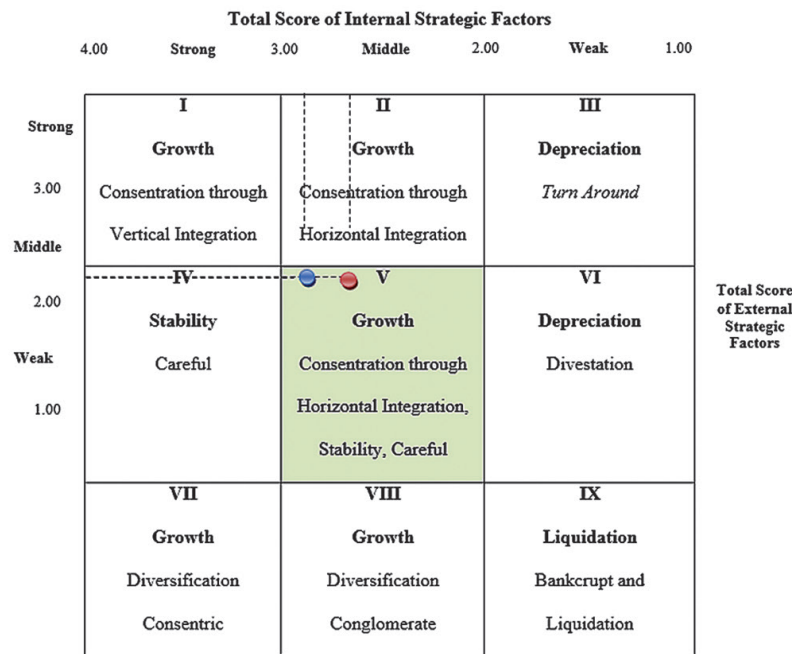Following the SWOT analysis suggestion, the strate-

Figure 1. Internal-External Matrix of Ubud 1 dan Tegallalang 1 Primary Health Care Total Score of Internal Strategic Factors (data source modified from David, *et al*[7])

Table 5. SWOT Matrix of Ubud 1 and Tegallalang 1 Primary Health Care

Strength (S)	Weakness (W)	Opportunity (O)	Threat (T)
Medical worker quanliy Non-medical worker quantity Medical worker qualification Health care organization structure Proper infrastructure Proper medical equipment Proper medical supply Health care budget and expenditure Financial audit system Funding system Drug availability Drug quality Service quality Tariff pattern Health care location Public relation	Medical worker quantity Non-medical worker quantity	Drug price level Non-medical worker qualification Public purchasing power Transportation facility Medical worker availability Local government's health budget Public health legal system implementation Local public service entity legal protection Local public service entity legal implementation Gianyar people's education level Health science development Health equipment technology development Communication equipment technology development	People's behavior towards environment
Strategy SO	**Strategy WO**	**Strategy ST**	**Strategy WT**
To carry out prioritized health program according to the local people's needs by mainstreaming consumer's satisfaction (S14, S17,)2)	To add the number of medical worker according to workload (W1, O4, 05, 08) To add the number of non-medical worker based on outsourcing pattern according to health care budget, revenue and expenditure (W2, O5,O8)	To encourage health promotion in every sub-health center and persuade people to pay attention to the environmental health condition (S17, T1)	To empower *karang taruna* (local youth organization) in the health care working area to be the environmental health agent in that region (W1, T1)

gies to be implemented by both health cares to increase the service variance and quality were managing health prioritized programs according to the needs of local people with emphasis on costumer's satisfaction, adding more medical worker based on the workload, and non-medical worker through outsourcing based on health care's budget, revenue and expenditure, intensifying health promotion in every sub-health care, persuading people to pay more attention to environmental health, and empowering the local youth organization in the health care region to be agent of environmental health promotion environment.

Discussion

Analysis results of the internal environmental found that both health cares obtained good rating. Quantity of the medical and non-medical worker were rated bad in both health cares. This was certainly health care's weakness in the administration of health care programs, due to imbalances between tasks and workforce. This study was in line with Susanto's study in North Bontang II Primary Health Care 2014 that found manpower shortage seen from the imbalance of tasks and the number of health workers in the morning and an afternoon shifts, causing the employee's workload was considered heavy.[8]

In connection with this, it was necessary to increase the amount of medical personnel. Based on Bali Provincial Health Profile 2013, Gianyar still had a shortage of 113 physicians, 241 nurses, and 168 midwives.[9] In addition, non-medical administrative work was still concurrently held by paramedics, causing not maximum human resource performance. This finding was in line with Wibowo's,[10] study in 2011 that found many administrative work in health cares were held by health personnels, such as nurses or midwives, which indicated that non-medical personnels in East Java health cares were still not enough.

Performing administrative activities in health care with inpatient care by health personnels, such as nurses and midwives, would lead to a decrease in the concentration, be unfocused and decline health care performance in services to the public.[10] In line with this was findings of Handayani *et al.*,[11] that there were 53.9 % of health care health workers got additional tasks, and 56.6% of the 53.9% stated that the additional tasks sometimes interfere with their main duties and functions in providing health care in the health care. In this case, additional non-medical worker through outsourcing patterns was necessary considering limited non-medical workers and budget available. There were still many concurrent responsibilities held by medical personnels, such as nurses and midwive.[3]

IFAS results indicated that health care location, relation with the public and the quality of medical worker had high weight value and became the important indicator and strategic in service development program. The quality of medical personnel had an important role as stated by Tomar and Dhiman,[12] in 2013 that the quality of medical personnel was important in stimulating the patient's recovery, especially their hospitality and special attention to patient.

Location also affects the use of health care because people prefer to use health facilities close to where they live in and accessibility. This was in line with Sutiarini's,[3] study in 2011 who stated that location of health cares in the society could improve public accessibility to health care services. Tegallalang 1 Primary Health Care is situated some distance from the city center and the crowd. In addition, the rival health facilities either private clinics or private midwives were not as dense as in Ubud 1 Primary Health Care. Bringing about the existence of a health care offering inpatient care is very effective. In the area with densed competitors, strategies are needed to attract consumers to come to the clinic for treatment of care by strengthening promotion and service quality.[6]

At the operational variables of Ubud 1 Primary Health Care, the infrastructure, medical equipment and medical supplies indicators had rating value ranged from 2.6 to 2.9. Despite included in the good value criteria, the value was less than 3. These suggested that improved infrastructure, medical equipment and medical supplies were needed because these would affect patient's satisfaction and health care service quality. Some study findings, such as conducted by Boller *et al.,*[13] Andaleeb *et al.,*[14] Baltussen *et al.,*[15] and Duong *et al.,*[16] successfully identified that the medical facility was part of quality dimension of inpatient care.

Study of Sharma and Narang in Wibowo,[10] stated that medical facilities had significant relation with patients revisit in ambulatory care. Khristiani,[17] concluded that development of the health care quality design could be carried out in the following order. The first priority was well-maintained inpatient services infrastructure, then followed by availability of medical facilities and medical support and availability of 24-hour ambulance transport.[17]

In contrast to the Tegallalang 1 Primary Health Care, only medical equipment rating value was still below 3 (2.7). Despite qualified as good, it needed to be increased. The results were in line with Duana's study,[18] that found 29.11% of respondents said that the completeness of Tegallalang 1 Primary Health Care equipment was bad. Kotler,[19] also stated that one of the efforts taken by the company management that primarily related directly to the customer's satisfaction was by providing the best possible facilities to attract and retain customers, such as providing convenience, needs and comfort for the service users. Facilities as seen by the consumers were part of the important tangible manifestation of the overall service offered.[20]

The comfort level within health care organization also needed to be considered aside from facilities and equipment. This was in accordance with the opinion of Sabarguna who also stated that health organizations needed to keep the comfort besides ensuring proper equipment.[21] The study also noted that 18 respondents (22.7%) stated that the completeness and the readiness of the equipment were as the reason not to utilize the delivery services at Tegallalang 1 Primary Health Care.[21] Infrastructure and supporting facilities for inpatient care would determine the quality of service and ultimately had

an impact on health care inpatient's satisfaction and loyalty. Based on the analysis of internal environment, the total weighted IFAS value was 2.6554 at Ubud 1 Primary Health Care and 2.9459 at Tegallalang 1 Primary Health Care health showing that almost all of internal indicators were the strength factors in the development of services of both health cares.

At Ubud 1 Primary Health Care, indicator of drug prices and purchasing power still had rating value below 3, despite included in the good category. The drug price level needed to be reviewed by the relevant health cares in providing health services to the people, since it would affect people's purchasing power. The results of the external environment analysis showed that people's behavior was a threat indicator in the development of health care service program. People's behavior toward the environment and healthy living habits needed to be instilled in the people themselves, since people's behavior towards the environment was closely related to disease spread in that area.[9] The total of EFAS value at Ubud 1 Primary Health Care was 2.9055 and 2.9459 at Tegallalang 1 Primary Health Care, showing that both health cares were in a good position to develop the health center program by leveraging existing opportunities.

The strategic position of Tegallalang 1 and Ubud 1 Primary Health Care in Gianyar District in developing health services was at the same concentration in growth strategy through horizontal integration, although they had different number of competitors. In connection with the growth strategy positions with horizontal concentration integration, then the grand strategy that could be applied by Tegallalang 1 and Ubud 1 Primary Health Care as the primary health cares with Local Public Service Entity status was to increase variance and quality of health care services.

This was in accordance with the opinion of Rangkuti,[22] that strategy was effort to design growth, either in sales, assets, profits or combination of those three, whereas that could be achieved by developing new products, lowering prices, increasing product quality or services, or improving access to a broader market.[22] These findings were in line with study conducted by Dias,[23] that suggested an increasing quality of essential health care services in public health through monitoring and evaluation of health services and the strengthening of health care service provider institutions. Perspectives on service quality improvement in health service strategy as also presented by Violeta,[24] stating that improving the quality of health care services could be appreciated by patients as customers through increasing human resources, facilities, infrastructure, facilities and service processes.

Conclusion

In the internal environmental factor analysis towards both health cares, two indicators are identified as weakness. They are quantity of medical and non-medical workers. Meanwhile, in the results of the external environment analysis, there only one indicator namely people's behavior towards the environment is identified as threat. The strategic position in the development of Ubud 1 and Tegallalang 1 Primary Health Care is a growth strategy with horizontal integration concentration. Hence, the grand strategy that can be implemented is increasing variance of products and quality of service. It is very likely to be implemented by the Local Public Service Entity primary health cares the policy that can provide flexibility to the health care to develop their own flagship program according to the needs of each health care based on characteristics of the served population and working area.

Recommendation

This study suggests that to address the weaknesses that still exist, it is necessary to add the number of medical worker through any calculation of the workload, and make a planning for non-medical staff recruitment in the health care level using outsourcing patterns according to the health care's revenue and expenditure budget and priorities. Then it needs mapping and analysis of public health in each health care working area.

Acknowledgement

References

1. Kementerian Kesehatan Republik Indonesia. Kebijakan dasar puskesmas. Jakarta: Kementerian Kesehatan Republik Indonesia; 2014.
2. Dinas Kesehatan Kabupaten Gianyar. Laporan kunjungan pasien Puskesmas Kabupaten Gianyar Tahun 2012. Gianyar: Dinas Kesehatan Kabupaten Gianyar.; 2012.
3. Sutiarini NK. Analisis SWOT untuk rencana strategik pengembangan badan layanan umum daerah (BLUD) Puskesmas di Kabupaten Gianyar [postgraduate thesis]. Denpasar: Program Pasca Sarjana Universitas Udayana; 2011.
4. Indrayathi PA, Listyowati R, Nopiyani NMS, Ulandari LPS. Mutu pelayanan puskesmas perawatan yang berstatus Badan Layanan Umum Daerah (BLUD). Kesmas: Jurnal Kesehatan Masyarakat Nasional. 2014; 9(2): 164 – 70.
5. David FR. Manajemen strategis konsep. Edisi ke-12. Jakarta: Salemba Empat; 2006.
6. Indrayathi PA, Mulyawan KH, Dewi PNT. Pemetaan berdasarkan lokasi dan jumlah pesaing puskesmas perawatan di Kabupaten Gianyar yang berstatus BLUD sebagai dasar penyusunan strategi bisnis. Jurnal Archive of Community Health. 2009; 3(1): 56 – 64.

7. David FR. Manajemen strategis. Edisi ke-tujuh. Jakarta: PT Prenhallindo; 2004.

8. Susanto H. Pengaruh fasilitas kesehatan terhadap kinerja pegawai pada Puskesmas Bontang Utara II di Kecamatan Bontang Utara Kota Bontang. eJournal Administrasi Negara. 2014; l2(1): 367-81.

9. Dinas Kesehatan Provinsi Bali. Profil Kesehatan Provinsi Bali tahun 2013. Denpasar: Dinas Kesehatan Provinsi Bali; 2013.

10. Wibowo NM. Strategi pengembangan pelayanan rawat inap puskesmas berbasis service delivery system. Jurnal Ekonomi dan Keuangan. 2013; 17(3): 337 – 56.

11. Handayani LN, Ma'ruf A, Sopacua E. Peran tenaga kesehatan sebagai pelaksana pelayanan kesehatan puskesmas. Buletin Penelitian Sistem Kesehatan. 2010; 13(1): 12-20.

12. TomarA, Dhiman A. Exploring the role of HRM in service delivery in health care organizations: A study of an Indian Hospital. Vikalpa. 2013; 38(2): 21-39.

13. Boller C, Wyss K, Mtasiwa D, Tanner M. Quality and comparison of antenatal care in public and private providers in the United Republic of Tanzania. Bulletin of the World Health Organization. 2003; 81(2): 116-22.

14. Andaleeb SS. Public and private hospital in Bangladesh: service quality and predictors of hospital choice, health policy and planning. 2000; 15(1): 95-102.

15. Baltussen RM, Ye Y, Haddad S, Sauerborn RS. Perceived quality of care of primary health care services in Burkina Faso. Health Policy Planning. 2002; 17: 42-8.

16. Duong DV, Binns CW, Lee AH, Hipgrave DB. Measuring client-perceived quality of maternity services in Rural Vietnam. International Journal of Quality Health Care. 2004; 6: 447-57.

17. Kristiani YR, Kuntjoro T, Utarini A. Pengembangan desain mutu pelayanan rawat inap Puskesmas Karanganyar Kebumen menggunakan quality function deployment. Jurnal Manajemen Pelayanan Kesehatan. 2006; 9(4): 209-14.

18. Duana K. Persepsi dan harapan ibu terhadap kualitas pelayanan persalinan di Puskesmas Tegalalang I Kecamatan Tegalalang Kabupaten Gianyar [undergraduate thesis]. Denpasar: Program Studi Kesehatan Masyarakat Universitas Udayana; 2005.

19. Kotler P. Manajemen pemasaran: analisis, perencanaan, implementasi, dan kontrol. Jakarta: PT. Prehallindo; 2001.

20. Lamb CW, Hair JF, Daniel CM. Marketing. United States of America: South Western College Publishing; 2002.

21. Sabarguna B. Pemasaran rumah sakit. Yogyakarta: Konsorsium RSI; 2004.

22. Rangkuti F. Analisa SWOT teknik membedah kasus bisnis. Jakarta: PT. Gramedia Pustaka Utama; 2008.

23. Dias C. The future of public health services in Europe: strategic intersection with healthcare services. International Journal of Healthcare Management. 2012; 5 (2): 69-73.

24. Violeta R, Iuliana C, Mihaela BA. Improving quality strategies in the health services marketing. Annals of the University of Oradea, Economic Science Series. 2008; 17 (4): 1159-63.

Family Planning Information, Education and Communication with Contraceptive Use

Komunikasi, Informasi dan Edukasi Keluarga Berencana dengan Penggunaan Kontrasepsi

Endah Winarni*, Muhammad Dawam**

*Research and Development Center for Family Planning and Family Welfare, National Family Planning and Population Board, Jakarta, Indonesia, **Research and Development Center for Population, National Family Planning and Population Board, Jakarta, Indonesia

Abstract

Contraceptive use prevalence in Indonesia within the last decade (2002-2012) did not significantly increase, although many Family Planning Information, Education and Communication activities had been performed. This study aimed to determine socioeconomic demographic factors related to Family Planning Information, Education, Communication, any Information, Education and Communication elements related to contraceptive use and Information, Education and Communication elements affecting on contraceptive use. Analysis used Indonesia Demographic and Health Survey 2012 as data source with analysis unit namely married women aged 15-49 years. Samples were 33,465 married women. Analysis used odds ratio (OR) between women receiving Family Planning Information, Education, Communication toward women not getting access to Family Planning Information, Education, Communication in relation to contraceptive use. This study found that Family Planning Information, Education, Communication, both media and officers were important factors in contraceptive use. Information, Education and Communication through television and poster/flyer had a significant relation with contraceptive use (OR 1.6 and 1.3). Medical officers, Family Planning officers and informal figures among community played an important role in Family Planning information and contraceptive use (OR 2.2; 1.4; and 1.2). In line with results, visits of Family Planning officers and medical officers informing contraception to clients at healthcare facilities significantly affected on contraceptive use (OR 1.5 and 2.6).

Keywords: Family planning information education communication, media, prevalence of family planning

Abstrak

Prevalensi KB di Indonesia selama satu dekade terakhir (2002-2012) tidak meningkat secara signifikan, walaupun pelbagai kegiatan KIE KB telah dilaksanakan. Penelitian ini bertujuan untuk mengetahui faktor sosio ekonomi demografi yang berkaitan dengan KIE KB, pelbagai unsur KIE yang berkaitan dengan pemakaian KB, dan unsur KIE yang berpengaruh terhadap pemakaian KB. Analisis menggunakan sumber data Survei Demografi dan Kesehatan Indonesia 2012 dengan unit analisis perempuan berstatus kawin usia 15-49 tahun. Jumlah sampel yang dianalisis 33.465 perempuan berstatus kawin. Analisis menggunakan *odds ratio* atau rasio kecenderungan antara perempuan yang memperoleh KIE KB terhadap perempuan tidak mendapatkan akses KIE KB dalam hubungannya dengan pemakaian KB. Temuan bahwa pemberian KIE KB, baik media maupun petugas, merupakan faktor penting dalam pemakaian KB. KIE melalui televisi dan poster/pamflet memiliki hubungan bermakna dengan pemakaian KB (OR 1,6 dan 1,3). Petugas medis, petugas KB dan tokoh informal di masyarakat berperan penting dalam penyampaian informasi KB dan pemakaian KB (OR 2,2; 1,4; dan 1,2). Sejalan dengan hasil tersebut, kunjungan petugas KB dan petugas kesehatan menjelaskan KB kepada klien di fasilitas kesehatan berpengaruh secara bermakna pada pemakaian KB (OR 1,5 dan 2,6).

Kata kunci: Komunikasi Informasi dan Edukasi, Keluarga Berencana, media, prevalensi Keluarga Berencana

Introduction

The program achievement within the last decade (2002-2012) as indicated by total fertility rate (TFR) and prevalence of contraceptive use was in less exciting condition. Results of Indonesia Demographic and Health Survey (IDHS) within the last decade (2002/2003-2012) showed TFR was stagnant at rate 2.6 children per woman. Meanwhile, contraceptive prevalence rate (CPR) within the same period was a little bit increasing. According to IDHS 2002-2003, CPR was 60.4% then it became 61.9% in IDHS 2012, so it increased only by 1.5% within the last decade (2002-2012).[1-3]

Prevalence of contraceptive use was not much increasing as many factors could affect. Based on theory of behavior Lawrence Green, health behavior including contraceptive behavior was affected by predisposing, driving and supporting factors. Predisposing factors were related to characteristics of individual background and contraceptive knowledge. Driving factors were related to encouragement from partners and public figures, meanwhile supporting factors were related to program factor, such as access to and quality of Family Planning Information, Education and Communication. In contraception program, activities of Family Planning Information, Education and Communication aim to improve contraceptive knowledge, attitude and practice, developing sustainability of contraceptive participants, then cultivating contraception among people.[4-6]

All aspects about Family Planning Information, Education and Communication activities addressed to any segments of target among people had been performed by the program. However, the achievement of prevalence of contraceptive use did not significantly increase. Based on such condition, this study aimed to determine socioeconomic demographic factors related to Family Planning Information, Education and Communication, any Information, Education and Communication elements related to contraceptive use and Information, Education and Communication elements affecting on the contraceptive use. Result of analysis hopefully could be used as recommendation for the program to complete the upcoming Family Planning Information, Education and Communication activities.

Method

Analysis used secondary data source from IDHS 2012. This study used cross-sectional design. Population was all 15 – 49-year-old women of childbearing age in Indonesia. Samples were married women aged 15 – 49 years included in the study. Respondents were 15 – 49-year-old women of childbearing age as many as 33,465. Independent variables were Family Planning messages through printed and electronic media, health officers, Family Planning officers and informal figures in community. Other independent variables were home visits of Family Planning officers to inform Family Planning messages as well as health officers informing Family Planning messages to clients at healthcare facilities. Control variables were maternal age, number of child, domicile, education and wealth index. Dependent variable was contraceptive use. Data analysis used distribution of frequency, cross tabulation and multivariate. Multivariate analysis was conducted by using binary logistic regression.

Results

Characteristics of Respondents

The highest percentage of respondents was at the age group of 30-39 years (37.7%), meanwhile the lowest was at the age group of 15-19 years (2.7%). In term of number of child, the highest percentage was at women who had 1 – 2 children (57.3%), meanwhile the lowest (8.2%) was at women who had five children or more. Based on education, the highest percentage was at women graduated from elementary school level of education (27.0%) and the lowest was at women graduated from higher education (10.0%). According to domicile, 50.8% showed women were in rural areas, and the remaining were in urban areas. Women were almost evenly distributed at five quintiles of wealth index (18-22%). There were more women respondents with employment status (63.3%).

Access to Family Planning Information by Mass Media

Media take an important role in spread of Family Planning message. Based on number of target, media are differentiated into mass media and media between individuals. Mass media are to inform Family Planning messages, both printed and electronic media.

At national scale, married women received Family Planning message from mass media, especially through television (45.3%), then followed by poster/flyer (27.6%), newspaper/magazine (13.6%) and the lowest was radio (9.5%). If results of IDHS 2012 was compared to results of IDHS 2002, there was a shift of the use of radio and poster/flyer in spreading Family Planning messages. The use of radio as broadcaster of Family Planning messages during that time was decreasing to 9.5% from 19%. Meanwhile, the use poster/flyer was increasing to 27.6% from 12.7%.

Although the percentage was low (9.5%), Family Planning messages through radio was more accessed by women aged 15-19 years, having 1-2 children or not yet having a child, graduated from higher education and senior high school level of education, living in urban areas, with wealth index as middle upper and uppermost, and more accessed by employed women.

Family Planning message through television was more accessed by women (45.3%). The message was almost

evenly accessed by women at all groups of age, received more by those who had no child yet and had 1 – 2 children, were graduated from senior high school and higher education, living in urban areas, at middle upper wealth index and accessed more by unemployed women.

Access to Family Planning information from newspapers or magazines was still low (13.6%). Reading Family Planning message on newspapers or magazines was accessed more by women aged 30 – 39 years, among women who had no child yet or had 1 – 2 children, were graduated from higher education, more living in urban areas, at middle upper wealth index and accessed more by employed women. Acceptance of Family Planning message from poster/flyer media had the similar pattern with Family Planning message from newspapers/magazines.

Access to Family Planning Information from Media with Contraceptive Use

Women who both accessed and did not access Family Planning messages from media showed contraceptive use 61.9%, the remaining (38.1%) did not use. Family Planning message from radio was less related to contraceptive use. Contraceptive use among women who listened to Family Planning message from radio was 60.8%, meanwhile contraceptive use of those who did not access Family Planning message from the similar media was higher (62.0%). A similar pattern occurred on the access to Family Planning message through newspaper/magazine.

In contrast to roles of radio and newspaper/magazine, role of television and poster/flyer toward contraceptive use showed the opposite pattern. Women who accessed Family Planning message through television showed 63.2% contraceptive use, meanwhile contraceptive use of women who did not receive Family Planning information from the similar media was lower (60.8%). The similar tendency with the role of television occurred on poster/flyer. Contraceptive use among women who received Family Planning message from poster/flyer was 63.8%, meanwhile the contraceptive use among women who did not receive Family Planning message from posters/flyers was lower (61.1%).

Women who ever received Family Planning message from media (TV, radio, newspaper/magazine, poster/flyer), the highest contraceptive use was generally at those aged 30 – 40 years, having 3 – 4 children, graduated from junior high school, living in rural areas, at middle upper wealth quintile index and among unemployed women. Otherwise, the low contraceptive use was among those who accessed Family Planning message from media that commonly occurred at the age group of 15 – 29 years and older age (older than 40 years), those who had no child yet and had five children or more, more living in urban

area, at lower and upper wealth index and among employed women.

By multiple logistic regression analysis approach (Table 1), relation between Family Planning message through media to contraceptive use was vary. Results showed that odd ratio between women who received Family Planning message from radio compared to the women who did not receive did not significantly relate to contraceptive use (OR 0.9). Family Planning message through newspaper and magazine also less gave opportunity to contraceptive use, although showed significant, but odd ratio was less than 1. Meanwhile, Family Planning message through television, poster/flyer significantly related to contraceptive use ($p < 0.05$). Women who watched Family Planning message on television had 1.5 times more likely to be contraceptive users than women who did not watch. Likewise, women who read Family Planning message on poster/flyer were 1.3 times more likely to be contraceptive use than women who did not read.

Access to Family Planning Information from Officers with Contraceptive Use

Family Planning message communication officers included Family Planning field officers, medical officers (doctors, midwives) as well as informal figures in community (teachers, public figures, religious leaders, national housewives association namely Support for the Prosperous Family). At national level, 25.1% of 15 – 49-year-old women of childbearing age received explanation Family Planning from medical officers; 10.4% from Family Planning field officers and 8.3% from the informal figures in community. Women receiving Family Planning message from medical officers were mostly 20 – 29 years old, having 1 – 2 children, graduated from senior high school and higher education level, living in urban and rural areas, at middle upper quintile wealth index and unemployed women.

Women who accessed Family Planning information to Family Planning field officers were mostly 20 – 39 years old, having 1 – 2 children and 3 – 4 children, graduated from junior high school level, living in rural areas, almost evenly at five wealth index and employed women.

Table 1. Relation of Mass Media to Contraceptive Use

Media for Family Planning Message	B	Standard Error	Significance	Odd Ratio
Radio	-0.060	0.041	0.140	0.941
Television	0.450	0.021	0.000	1.568
Newspaper/magazine	-0.117	0.037	0.002	0.889
Poster/flyer	0.297	0.028	0.000	1.345

Remarks:
Reference group: women receiving Family Planning message from media
Comparison group: women not receiving Family Planning message from media

Table 2. Percentage Distribution of Married Women within The Last Six Months Receiving Family Planning Information Based on Contraceptive Use

Family Planning Information	Contraceptive Users		Non Contraceptive Users		Total	
	N	%	N	%	N	%
Visited by Family Planning field officers[1] informing Family Planning	1.458	67.4	706	32.6	2.165	100.0
Receiving Family Planning information from medical officers	6.014	71.5	2.399	28.5	8.413	100.0
Receiving Family Planning information from other officers[2]	1.898	68.2	884	31.8	2.782	100.0
Visiting health facilities[3] for medical checkup	11.205	64.7	6.124	35.3	17.329	100.0
Health facility officers[3] discussing Family Planning	3.344	73.9	1.182	26.1	4.526	100.0
Receiving Family Planning information from special car for mobile information unit	248	61.0	159	39.0	407	100.0
Receiving Family Planning information from traditional art	63	58.2	45	41.8	108	100.0

Table 3. Relation of Family Planning Information from Officers, Special Car for Mobile Information Unit and Traditional Art to Contraception Use

Communicator of Family Planning Message	B	Standard Error	Significance	Odd Ratio
Family Planning officers[1]	0.325	0.043	0.000	1.385
Medical officers[1]	0.802	0.027	0.000	2.231
Other duties (public figures, religious leaders, duties of support for the prosperous family)[1]	0.175	0.046	0.000	1.191
Special car for mobile information unit[2]	-0.184	0.108	0.089	0.382
Traditional art[3]	-0.155	0.204	0.446	0.856

Remarks: comparison group:
1) not receiving Family Planning message from officers
2) not receiving Family Planning message from the car for mobile information unit
3) not receiving Family Planning message through traditional art

Percentage of women who accessed Family Planning message from informal figures was higher at women aged 30 – 40 years, having 1 – 2 children, graduated from higher education level, living in urban area, at the highest quintile of wealth index and at the circle of employed women.

Family Planning Information through Special Car for Mobile Information Unit and Traditional Art

Family Planning message is not only informed by media and officers, but also by special car for mobile information unit as well as inserted through traditional art. Percentage of women receiving explanation of contraception through the car and traditional art media was relatively low (1.2% and 0.3%) (Table 2). Of relatively low percentage of those receiving Family Planning message from the car, 61.0% were contraceptive users and the remaining were not. Meanwhile, of women receiving Family Planning message from traditional art, 58.2% were contraceptive users and 41.8% were not.

According to results of odd ratio (Table 3), communication officers of Family Planning Information, Education and Communication that had a significant relation with contraceptive use were medical officers, then Family Planning officers and informal figures in community. Married women receiving Family Planning message from medical officers were 2.2 times more likely to be contraceptive users. Women receiving explanation from Family Planning field officers were 1.4 times more likely to be contraceptive users. The similar finding was that women who received Family Planning Information, Education and Communication from informal figures were 1.2 times more likely to be contraceptive users than women who did not receive. Meanwhile, Information, Education and Communication through the special car for mobile information unit and inserted message in traditional art showed no significant relation to contraceptive use.

Contact to Family Planning Field Officers and Medical Officers

IDHS 2012 collected information about visits of Family Planning field officers to clients, clients' visits to healthcare facilities for medical checkup and about discussion on contraception at the time of the client's visit at the healthcare facilities. This information was meant to determine role of the officers in personally motivating women to use contraceptives nor developing contraceptive use.

Women respondents of childbearing age that were visited by Family Planning officers were relatively low (6.5%). Meanwhile, percentage of women visiting to healthcare facilities for medical checkup were relatively high that was 51.8% (17,329 women). Percentage of women at healthcare facilities who said that there were health officers informing contraception was 13.5%

Table 4. Percentage Distribution of Married Women, Receiving Family Planning Information from Officers Based on Contraceptive Use

Communicator of Family Planning Message	Contraceptive Users		Non Contraceptive Users		Total	
	%	N	%	N	%	N
Visited by Family Planning officers informing Family Planning	67.4	1458	32.6	706	100.0	2165 (6.5%)
Clients visiting to healthcare facilities for mother and child medical checkup	64.7	11.205	35.3	6.124	100.0	17239 (51.8%)
Medical officers at healthcare facilities discussing Family Planning with clients	73.9	3344	26.1	4.526	100.0	4526 (13.5%)

Table 5. Relation of Family Planning Officers' Visit and Medical Officers Discussing Family Planning to Contraceptive Use

Communicator of Family Planning Message	B	Standard Error	Significance	Odd Ratio
Visits of Family Planning officers informing Family Planning[1]	0.416	0.048	0.000	1.515
Medical officers informing Family Planning[2]	0.975	0.035	0.000	2.650

Remarks: comparison groups included
1) Not having visits of Family Planning officers explaining contraception,
2) Officers not informing Family Planning.

Table 6. Relation between Characteristics of Women, Family Planning Information, Education and Communication and Contraceptive Use

Variable	B	SE	Significance	OR
Age of women	0.376	0.031	0.000	1.456
Living children	0.175	0.029	0.000	1.191
Education of women	0.133	0.028	0.000	1.142
Domicile	-0.035	0.028	0.208	0.966
Quintile wealth index	0.036	0.030	0.223	1.037
Working status	0.082	0.026	0.002	1.086
Media of Family Planning Information, Education and Communication	0.043	0.027	0.117	1.043
Communicator of Family Planning Information, Education and Communication	0.482	0.029	0.000	1.620
Constant	0.297	0.031	0.000	1.346

(Table 4). Condition in which women visited to healthcare facilities, yet had no discussion on Family Planning is called 'missed opportunity' of the officers in conducting development of contraceptive users or motivating clients to be contraceptive users.

The highest contraceptive use (although the percentage was low) was among women who got Family Planning information by medical officers while medical checkup at healthcare facilities (73.9%), then followed by women visited by Family Planning officers informing Family Planning (67.4%) and the lowest contraceptive use was at those visiting healthcare facilities (64.7%) (Table 4).

Women Having Visits of Contraception Officers, Visiting to Healthcare Facilities and Any Discussion on Family Planning at the Healthcare Facilities

At circle of women who had visits of Family Planning officers, visited to healthcare facilities as well as women at the healthcare facilities receiving Family Planning message from the officers, the contraceptive use generally occurred on the age group of 30 – 39 years, those who had 3 – 4 children, graduated from junior high school and higher, balanced between those living in rural and urban areas, at middle lower quintile wealth index, and more unemployed women.

Based on results of OR (Table 5), Family Planning officers' visit to women and informing Family Planning showed a significant influence, which was giving opportunity 1.5 times to be contraceptive users. Medical officers discussing Family Planning with women of childbearing age at the time of visit to healthcare facilities showed a higher influence, which was giving opportunity 2.65 times to be contraceptive users.

Characteristics, Family Planning Information, Education and Communication and Contraceptive Use

Relation between independent variables (characteristics of women, Family Planning message from media, Family Planning message from duties) and dependent variable (contraceptive use) were presented in Table 6.

Women aged 15 – 29 years showed the highest ten-

dency that was 1.456 times to be contraceptive users as compared to older women. Women having 3 or more number of living children were also 1.191 times more likely to be contraceptive users than women who had less number of children (1 – 2 children). Women who were relatively high educated (graduated from junior high school and higher) were 1.142 times more likely to be contraceptive users than lower educated women (graduated from elementary school or lower). Of any media communicating Family Planning message, message from Family Planning officers showed the higher opportunity that was 1.620 times to be contraceptive users.

Discussion
Media of Family Planning Information, Education and Communication and Contraceptive Use

Spread of Information, Education and Communication through mass media was the important strategy to promote Family Planning, improve knowledge of Family Planning, attitude to Family Planning and change behavior to be contraceptive users.[7-9]

Analysis findings showed that of any media of Family Planning Information, Education and Communication, televisiom and poster/flyer contributed significant influence to contraceptive use. Women receiving Family Planning message through television were 1.6 times to be contraceptive users. Supporting finding of another study was that message through ad on television had a significant influence to contraceptive behavior.[10] The similar results were also obtained in Ghana and Post-Soviet Central Asia, exposure to Family Planning information through mass media had a strong influence to efforts to both use and receive contraception.[11,12] The strong influence of television could be explained by that exposure of information through this media had more advantages, such as pictures or visualization, beauty and attraction aspects, reach to wider target and being broadcasted repeatedly.[5,6] The similar finding on advantage of television also could be explained by results of study on Identification of Execution of Information, Education and Communication on Population, Contraception and Family Development in Central Java and Southeast Sulawesi in 2014.[13] Study conducted in India in 2004 concerning on the use of television and radio resulted a little bit different depiction. The use of television and radio to spread Family Planning message in India was still low.[14]

Poster/flyer media communicating Family Planning Information, Education and Communication also showed significant relation to contraceptive use. Several concerns strengthening the role of poster/flyer were the increasing use of poster/flyer to 27.6% in 2012 from 12.7% in 2002/2003.[1,3] By the increase of poster/flyer use, it showed that reach of spreading of Family Planning

information through this media became wider.

This analysis found that radio as source of information about Family Planning media was less strong in influencing contraceptive use among people. There were only 9.5% of women who admitted that they listened to Family Planning message from radio. Limited access to Family Planning information through radio also was found in results of study in urban area of Bangladesh and Post-Soviet Central Asia in 2015.[12,15] Family Planning message through radio was relatively low accessed by women because less competitive with any kind of broadcasting in form of entertainment.[5,6]

Effectivity of the use of media for Information, Education and Communication was determined by many senses involved in message acceptance. The more senses were used, the more understandable communication of message was. To illustrate between radio and television, message through television needed more senses of communicators involved than message through radio.[5,6] The low access of Family Planning information was contrary to finding of study conducted in rural areas of Nigeria, Southwest Nigeria, Dandi Garo Bangladesh showing the high accessibility of information about contraception than television.[16-18] Results of analysis by using data of Indonesia Demographic and Health Survey 2007 provided recommendation that beside using national television stations, spread of Family Planning information a also optimalized local television stations.[19]

Family Planning message through radio was more accessed by younger, high educated women, middle upper wealth index, living in urban area and more among employed women, although generally target access to Family Planning information through radio was low. Based on characteristics of the listeners of Family Planning information through radio, the program was expected to be able to make package of Family Planning Information, Education and Communication appropriate with desires of target, increase of airing frequency and number of airing stations.

Family Planning message through newspaper/magazine was also less influential for women to be contraceptive participants. Based on the present data, women who accessed information about contraception from newspaper was relatively low. Newspaper/magazine was consumption of particular segment among people, which was among those old (30 – 39 years old), high educated, high quintile wealth index, more living in urban area and among employed women. That caused newspaper media as source of Family Planning information was less able to reach all levels of society. Different with in Indonesia, results of study in Pakistan very recommended the use of printed media in spreading Family Planning information.[20]

Any acceptance of Family Planning Information,

Education and Communication through media and the limited effect of media on contraceptive behavior were in line with advocacy activity and completed Family Planning Information, Education and Communication. Advocacy activity and Family Planning Information, Education and Communication along this time highlighted 'above the line media' (television, radio, newspaper/magazine). That was based on strategy of area level distribution in the use of prior Information, Education and Communication media, which was that the central government focused on improvement of cognition scope (knowledge). Meanwhile, province conducted Information, Education and Communication on 'through the line media' (billboard, banner) focusing on affection scope. Then district/city conducted Information, Education and Communication on 'below the line media' focusing on behavioral change. Such strategy was designed in condition on which National Family Planning Coordinating Board was still centralistic, with the assumption that all area levels had capacity of adequate support for operational management. However after regional autonomy, such strategy was less effective, especially at district/city level because support for operational management was decreasing drastically, so there happened the decrease of intensity of Family Planning program performance including Information, Education and Communication on Family Planning. Although there occurred the increase of budget support for the execution of Population and Family Planning program (including for Family Planning Information, Education and Communication), yet it occurred in the central, meanwhile budget support in district/city was still limited.[5,6]

Officers of Family Planning Information, Education and Communication and Contraceptive Use

Family Planning officers as communicator of Family Planning information took the important role in influencing clients on contraceptive use. According to results of study, married women who received explanation from Family Planning officers were 1.4 times more likely to be contraceptive users than those who did not receive. This was acceptable considering that Family Planning officers were the keys that directly met target/people. The main duties of Family Planning officers were motivating and developing contraceptive users as well as maintaining communication relation with families around their area of development.[21] Family Planning field officers in performing Information, Education and Communication commonly used display in forms of posters, brochures.[22] The important role of the officers in term of communication aspect with people was less aligned with the decreasing number. Availability of Family Planning field officers nowadays was significantly decreasing compared to condition of number of the officers prior to regional au-

tonomy. Before the regional autonomy, composition of Family Planning field officers compared to village was 1 : 1 (1 officer 1 village). Meanwhile, the condition today was that Family Planning officer had 2 – 6 development areas in average.

Medical workers as communicator of Family Planning information also had a very important role in affecting on the contraceptive use. Married women who received Family Planning information from medical officers within the last six months before the survey were 2.2 times more likely to be contraceptive users. Medical officers were the personnel officers who directly met, provided Family Planning counseling to prospective contraceptive user clients.[19] Medical officers in delivering counseling were expected to be able to transfer knowledge to clients, especially any related to contraceptive tools/ways from medical aspect, such as work mechanism of contraceptive tools/ways, side effects of contraceptive tools/ways. Ability and success of medical workers in delivering counseling made clients understand, firm and fit to the contraceptive tools/ways they chose, then clients were ready to use contraceptives. The more creative and sympathic way of communication between medical officers and clients would increase the degree of acceptance and continuity of contraceptive use.[23] For the success of Information, Education and Communication activity, results of study in India in 2004 recommended that execution of Information, Education and Communication activity should make a coordination with other relevant institutions which had budget support and the similar activity.[14]

Role of informal figures in community was also important and significantly related to contraceptive use. In relation to the decreasing condition of Family Planning field officers nowadays, which had development areas more than one village (2 – 6 villages), so in this situation it needed assistance of potential personnels to assist Information, Education and Communication, such as informal figures in community. Determination of traditional leaders/informal figures as communicator in communicating Family Planning message was based on considerations that they were the role models, well-known by people and surround the people. Furthermore, the role of tradional leaders/informal figures in socialization of Family Planningprogram became very important, especially in influencing, inviting, figuring and leading the participation of people around their environment in aim to support the success of program.[24]

Family Planning messages communicated through special car for mobile information unit or inserted through traditional art among people was very low accepted by respondents, each showed only 1.2% and 0.3%. The very low target access to Information, Education and Communication broadcasting media made

Family Planning messages to the target become insignificant in influencing on contraceptive use. Finding in another study on Information, Education and Communication showed that respondents said they ever saw the special car for mobile information unit, but they never saw/followed counseling informed through the car.[13] This condition was suggestion for the program to evaluate the whole about the use of car as media for spreading Family Planning information in the field.

Another important stuff was results of study showing that visits of Family Planning officers to women of childbearing age through face-to-face Information, Education and Communication contributed 1.5 times opportunity for the women to be contraceptive users. Role of medical officers communicating Family Planning Information, Education and Communication to targeted clients at healthcare facilities even showed higher influence that was 2.65 times to be contraceptive users than clients who did not receive. Condition in which there was no discussion on Family Planning at the time when clients came to healthcare facilities was called 'missed opportunity' for the officers to conduct development to contraceptive user clients or to motivate clients to use contraceptives.[25] In order to optimize role of medical officers to inform about contraception to target (minimalizing 'missed opportunity'), it took a firm and harmonious cooperation and coordination between National Family Planning and Population Board and the local Health Agency. This recommendation was in line with study in India in 2004 that success of Information, Education and Communication activities needed coordination between institutions involved.[14]

Based on characteristics of target, activity of Family Planning Information, Education and Communication was prioritized and intensified among older women (40 years and older), having 1 – 2 children and among segment of lower educated women (graduated from elementary school or lower) both in urban and rural areas. In line with that, group of women with opposite characteristics still received Family Planning Information, Education and Communication, yet intensity (frequency) of the communication was relatively lower.

Conclusion

Characteristics that have significant relation with contraceptive use are age, number of living children and women's education level. Of any types of media of Family Planning Information, Education and Communication, television and poster/flyer are source of Family Planning information that have significant relation with contraceptive use. Between communication officers of Family Planning Information, Education and Communication, Family Planning officers, medical officers and informal figures in community have significant role in communi-

cating Family Planning Information, Education and Communication which finally make targets use contraceptives. Likewise, visits of Family Planning officers personally to clients show a significant relation to contraceptive use. Moreover, the role of medical officers informing Family Planning to clients at healthcare facilities shows the very high opportunity for clients to use contraceptives.

Recommendation

Segmentation of target for Family Planning Information, Education and Communication activities shoud be prioritized among women aged 40 years and older, having 1 – 2 children and lower educated. It needs the strengthened materials for Family Planning Information, Education and Communication and increase of the Family Planning Information, Education and Communication activites through any media (especially television, poster/flyer) to women as the targeted segment, especially those who have not used contraceptives yet. Referring to experience on activity of Family Planning Information, Education and Communication in India about the importance of coordination with other relevant institutions, harmonious coordination and cooperation between National Family Planning and Population Board and the Health Agency should keep maintained, especially in term of availability of medical workers providing Family Planning Information, Education and Communication to clients at healthcare facilities. This is in aim to minimize the 'missed opportunity' condition in provision of Family Planning Information, Education and Communication by medical officers at healthcare facilities. The importance of role of Family Planning field officers in term of communication of Family Planning Information, Education and Communication to the target, so it is necessary to strengthen quality and quantity of Family Planning field officers, and keep them at their position as Family Planning field officers/contraception officers, as well as not moved to other institutions. Cooperation with informal figures who are influential in community (public figures, religious leaders, women group in the community/Support for the Prosperous Family (PKK)) should be kept maintained in order to assist the main duties and functions of Family Planning field officers in term of Family Planning Information, Education and Communication.

References

1. Badan Pusat Statistik, Badan Koordinasi Keluarga Berencana Nasional, Departemen Kesehatan, dan Macro International Inc. Survei demografi dan kesehatan Indonesia 2002-2003. Columbia, Maryland, USA: BPS dan Macro International (MI); 2003.
2. Badan Pusat Statistik, Badan Koordinasi Keluarga Berencana Nasional,

Departemen Kesehatan, dan Macro International Inc. Survei demografi dan kesehatan Indonesia 2007. Columbia, Maryland, USA: BPS dan MI; 2008.

3. Badan Pusat Statistik, Badan Koordinasi Keluarga Berencana Nasional, Departemen Kesehatan, dan Macro International Inc. Survei demografi dan kesehatanIndonesia 2012. Columbia, Maryland, USA: BPS dan MI; 2013.

4. Badan Kependudukan dan Keluarga Berencana Nasional. Grand strategi advokasi dan KIE pembangunan kependudukan dan keluarga berencana nasional. Jakarta: Badan Kependudukan dan Keluarga Berencana Nasional; 2011

5. Badan Kependudukan dan Keluarga Berencana Nasional. KIE KKB Lini Lapangan Konsep, Rancangan dan Strategi, Media KIE Kreatif dan Evaluasi. Jakarta: BKKBN; 2013.

6. Badan Kependudukan dan Keluarga Berencana Nasional. Revolusi Advokasi dan KIE program kependudukan dan keluarga berencana nasional. Kerjasama BKKBN dengan Prodi Penyuluhan dan Komunikasi Pembangunan, Sekolah Pasca Sarjana UGM 2013. Jakarta: Badan Kependudukan dan Keluarga Berencana Nasional; 2013.

7. Mwaikambo L, Speizer IS, Schurmann A, Morgan G, Fikree F. What works in family planning interventions: A systematic review of the evidence. Studies in Family Planning. 2011; 42(2): 67-82.

8. Basten S. Mass media and reproductive behaviour: Serial narratives, soap operas and telenovelas [working paper]. The Future of Human Reproduction. Oxford: St. John's College and Vienna Institute of Demography; 2009.

9. Wakefield MA, Loken B, Hornik RC. Use of mass media campaigns to change behaviour. Lancet. 2010; 376 (9748): 1261–71.

10. Kusuma PDP [media online]. Pengaruh pendidikan, pengetahuan dan terpaan iklan layanan masyarakat KB versi Shireen Sungkar dan Teuku Wisnu di TV terhadap perilaku KB pada wanita atau pria dalam usia subur. Jurnal Interaksi. [cited 2016 march 1]. Diunduh pada http://ejournal.undip.ac.id/index.php/interaksi/article/view pada 1 Maret 2016.

11. Olayeye DO, Bankole A. The Impact of mass media family planning promotion on contraceptive behavior of women in Ghana. Population Research and Policy Review. 1994; 13 (2): 161-177.

12. Habibov N, Zainiddinov H. Effect of TV and radio family planning messages on the probability of modern contraception utilization in post-Soviet Central Asia. The International Journal of Health Planning and Management [serial on internet]. 2015 [cited 2016 Apr 5]. DOI: 10/1002/hpm.2318. Available from: http://www.ncbi.nlm.nih.gov/pubmed/26490393

13. Badan Kependudukan dan Keluarga Berencana Nasional. Identifikasi pelaksanaan KIE program kependudukan, KB dan pembangunan keluarga (KKBPK) tahun 2014. Jakarta: BKKBN; 2014.

14. Devi U. Situational analysis of IEC activities in family welfare programmes. The Journal of Family Welfare, 2004; 50 (1): 15-23.

15. Kabir M, Islam MA. The impact of mass media family planning programmes on current use of contraception in Urban Bangladesh. Journal of Biososcial Science, 2000; 32: 411-9.

16. Omoera OS. Broadcast media in family planning matters in rural Nigeria: The ebelle scenario. Journal Communication, 2010; 1 (2): 77-85.

17. Adekunle LV, Olaseha IO, Adeniyi, JD. Potential impact of the mass media on family planning in an urban community in South Western Nigeria. Tropical Journal of Obstetric and Gynaecology. 2004; 21: 88-90.

18. Islam MR, Islam MA, Banowary B. Determinants of exposure to mass media family planning messages among indigenous people in Bangladesh: A study on The Garo. Journal on Biosocial Science. 2009; 41 (2): 221-29. DOI: 10.1017/S0021932008003088.Epub.

19. Sumariati R, Susilastuti DH, Hadna AH. Peran media massa dalam mempengaruhi sikap keikutsertaan ber-"keluarga berencana": Analisis data survei demografi dan kesehatan Indonesia tahun 2007. Jurnal Manajemen dan Pelayanan Farmasi. 2013; 3 (1): 46-57.

20. Rawan B. Neglecting press and failure in population control in Pakistan. Global Media Journal, 2010-2011; 4 (1).

21. Kusuma UK, Pratomo H, Bahtiar A. Kinerja penyuluhan Keluarga Berencana di Indonesia: pedoman pengujian efektifitas kinerja pada era desentralisasi. Kesmas: Jurnal Kesehatan Masyarakat Nasional. 2010; 5 (1): 3-8.

22. Wowiling GJ, Pantow J, Waleleng G. Komunikasi informasi dan edukasi (KIE) sebagai bentuk sosialisasi program keluarga berencana di Kelurahan Tingkulu Kecamatan Wanea Manado. Journal "Acto Diurna". 2015; 4 (1).

23. Suryani M. Model Pengambilan keputusan meningkatkan akseptor Keluarga Berencana metode kontrasepsi jangka panjang. Kesmas: Jurnal Kesehatan Masyarakat Nasional. 2013; 7 (11): 483-8.

24. Eka Y. Peranan kepala adat dalam sosialisasi program KB di Pampang Kelurahan Sungai Siring Samarinda. eJournal Ilmu Komunikasi. 2013; 1 (2): 95-108.

25. Muhammad I. Determinant unmet need. Jakarta: Fakultas Ekonomi-Universitas Indonesia; 2009 [dikutip 2 Maret 2016]. Tersedia di-http://lib.ui.ac.id/file?file=digital/126978-6683-Determinan%20unmet-Analisis.pdf.

SUBSCRIPTION FORM

The undersigned:

Name   : ....
Address   : ....
                       ....
                       ....
Phone Number : ....
E-mail   : ....
Edition   : ....

is willing to be Kesmas: National Public Health Journal customer paying the cost amount Rp.300.000,-/year/4 edition (include postage expense)*.

................................, ...

(..)

*If buying previous edition and more than 2 (two) copies per transaction, the costumer is charged postage expense.

Please make a bank transfer payment to:
FAKULTAS KESEHATAN MASYARAKAT UNIVERSITAS INDONESIA
BANK BNI KANTOR CABANG UI DEPOK
ACCOUNT NO. 0067984984

Then please send the proof of payment to:
Secretariat of Kesmas: National Public Health Journal
Faculty of Public Health Universitas Indonesia
Rumpun Ilmu Kesehatan Building A 3rd Floor
Kampus Baru UI Depok 16424
Mobile Phone: 0815-1141-6600
or email: kesmas.phj@gmail.com