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IAI CONFERENCE

RESEARCH ARTICLE

Effectiveness of public service advertisements on the use of antibiotics in Pangkalpinang

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Abstract

Background: Previous studies have shown that the public needs information related to drugs from reliable sources of pharmaceutical personnel. One of the information media that has never been used is electronic public service advertisement. **Aim:** Study the effectiveness of public service advertisements on the use of antibiotics in Pangkalpinang City to find a medium that functions in reducing the number of antibiotic resistance. **Method:** This research was conducted in Pangkalpinang from December 2018 to September 2019 using a quasi-experimental quantitative approach with a time-series design. The sample of this research consisted of 400 people determined by accidental sampling techniques and analysed in univariate and bivariate using a dependent test. **Results:** There was a significant difference with the value of p = 0.0001 between the use of antibiotic respondents before (pre-test) and after airing of public service ads (post-test). **Conclusion:** Public service advertisements about antibiotics were effective in terms of antibiotics use.

Introduction

Antibiotics are the most widely used drugs for infections caused by bacteria. Various studies have found that about 40-62% of antibiotics are misused, such as for diseases that do not require antibiotics. A survey about the quality of antibiotic use in various parts of the hospital found that 30% to 80% were not based on indications (Hadi *et al.*, 2009). Antibiotic resistance harms many parties. Infectious diseases caused by bacterial resistance increase the time the patient suffers from the illness. Thus, if the patient is admitted to the hospital, the hospitalization costs will undoubtedly increase. According to the Centers for Disease Control and Prevention, every year in the United States, two million people get infected with bacteria that have become resistant to antibiotics, and at least 23,000 people die each year as a direct result of this resistance. The WHO data states that, in 2016, 480,000 new cases of multidrug-resistant tuberculosis (MDR-TB) have emerged in the world (WHO, 2016).

In Indonesia, public understanding of the benefits and impacts of using antibiotics is still weak, constituting a severe problem as the level of antibiotic use is quite alarming. People today freely buy and take medicines without a doctor's prescription. It is essential to impart knowledge about antibiotics to the community. Therefore, health workers, especially pharmaceutical workers, must work hard to increase public awareness regarding the proper and correct use of antibiotics. Research regarding community knowledge in the village of Penyamun, Bangka Regency, shows that the community still has in-depth knowledge about the use of antibiotics: 38 respondents (35.8%) had good knowledge, 25 (23.6%) had moderate knowledge, and 43 respondents (40.6%) had deep expertise (Septiana, 2016). These results are also in line with those of research regarding the use of amoxicillin in Penagan Village, Bangka Regency, showing that 54.27% of the community still lack knowledge (Zulaika, 2018).

Antimicrobial resistance (AMR) is now a global public health issue, projected to affect the longevity of people

and increase the health expenditure of countries. Its impact is expected to be higher in low- and middle-income countries, where healthcare systems are suboptimal and ill-equipped to deal with the issue. As antibiotic misuse is the primary driver for AMR, there is an acute need to create awareness among the general public, calling calls for a comprehensive communication strategy that considers the various drivers of AMR and associated solutions. In the short term, the focus of communication strategies should be to raise awareness in specific interest groups by channelling limited resources to achieve definite objectives, thereby improving the chances of behaviour change. The general public can be targeted at a later stage or as a second phase with specific strategies and messages (Mathew, Sivaraman & Chandy, 2019).

Public service announcements about the use of antibiotics have never been on television because antibiotics are hard drugs that have specific rules. Likewise, in the province of Bangka Belitung Islands, public service advertisements regarding the proper and correct use of drugs have never existed. Despite the expanding use of social media, little has been published about its appropriate role in health promotion and even less has been written about evaluation (Neiger *et al.*, 2012). The five-year strategy of the Department of Health outlined seven key areas to address antibiotic resistance; Public Health England (PHE) is responsible for improving surveillance, optimising prescribing practices, and educating doctors and the public about the risks of antibiotic misuse (Cully, 2014).

The findings of Ashe and the authors (2006) indicate that the educational poster had no effect on antibiotic use. Farmers, physicians, and patients need to recognize the value of antibiotics and protect this vulnerable resource. In the absence of enlightened self-interest, more effective policies are required because the current ones are insufficient. A global, multidisciplinary effort is needed to slow the development of antibiotic resistance; it will take more than one shepherd to prevent our commons from being overgrazed (Cully, 2014). Videotron is more effective and efficient than billboards and posters as it can reduce visual waste and does not take up much space (Aji, 2018). Therefore, it is necessary to study the effectiveness of public service advertisements on the use of antibiotics in Pangkalpinang City to find a medium that functions in reducing the number of antibiotic resistance.

Method

This research was conducted in Pangkalpinang City in December 2018-September 2019. It used a quasi-experimental quantitative approach with a time-series design, applying the pre-test and post-test methods. The population in this study consisted of the people of Pangkalpinang City. The sample size was calculated using the Slovin formula resulting in a sample of 400 respondents. The instrument used in this study was a questionnaire. Respondents read the explanation and then filled out written informed consent. Before taking primary data, the validity and reliability were tested at Sungailiat city. After that, four pre-test measurements for antibiotics use were carried out for each sub-districts of Pangkalpinang city at one-week intervals. During one month, public service advertisements were aired on Videotron in several strategic places in Pangkalpinang city. Furthermore, four post-test measurements were performed on the same respondents as well. The data analysis methods in this research are univariate and bivariate using the dependent t-test. This study has received ethical approval from the health research ethics committee of The Health Research Polytechnic of The Ministry of Health, Pangkalpinang.

Results

The demographic profiles of this study can be seen in Table I. The results of this study show that the respondents have used antibiotics before. Thus, it was manifest that the answers to the questionnaire corresponded to the reality of the actual use of antibiotics. The most widely used was amoxicillin, i.e. 398 respondents (99.5%). Other antibiotics used were clindamycin, chloramphenicol, metronidazole, ciprofloxacin, ampicillin/cloxacillin, and tetracyclines.

Table I: Demographics of respondents

Demographic profiles	Category	Total	
		n=400	%
Category of the highest education	Low (not attending school-Primary school-Junior high school)	134	33,5
	High (Senior high school-University)	266	66,5
Age	Youth (17-25 years old)	86	21,5
	Adult (26-45 years old)	180	45
	Elderly (>46 years old)	134	33,5
Job	Not working	194	48,5
	Working	206	51,5
Resources	1 media	387	96,8
	2 media	9	2,3
	3 media	4	1
Experience	Never	0	0
	Ever	400	100
Number of Usage	Once	192	48
	2 times	63	15,8
	3 times	145	36,3

The pre-test and post-test measurements show 365 people pre-test (91.3%) and 388 people -test (97%) (Table II). After conducting a t-test analysis on the use of antibiotics pre-test and post-test in all respondents, there was a significant difference, with a $p < 0.0001$ (Table III), indicating that public service advertisements are effective in reducing antibiotics misuse. The use of antibiotics categorised as "not good" at pre-test measurements was 8.8%, while at post-test measurements, this number decreased to 3%. Public service advertisements on the use of antibiotics effectively improved the use of antibiotics in the community of Pangkalpinang.

Table II: Description of the use of antibiotics in pre-test and post-test measurements

No	Sub-district	Pre-test				Post-test			
		Good	%	Not good	%	Good	%	Not good	%
1	Gabek	48	84.2	9	15.8	54	94.7	3	5.3
2	Gerunggang	55	96.5	2	3.5	55	96.5	2	3.5
3	Girimaya	49	86	8	14	53	93	4	7
4	Rangkui	56	98.2	1	1.8	56	98.2	1	1.8
5	Pangkalbalam	50	87.7	7	12.3	57	100	0	0
6	Taman Sari	55	94.8	3	5.2	58	100	0	0
7	Bukit Intan	52	91.2	5	8.8	55	96.5	2	3.5
	Total	**365**	**91.3**	**35**	**8.8**	**388**	**97**	**12**	**3**

Table III: Description of the results of paired samples test

		Paired differences					t	*df*	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the difference				
					Lower	Upper			
Pair 7	Average score of pre-test – average score of post-test	-0.813	1.333	0.067	-0.944	-0.681	-12.191	399	<0.0001

Discussion

The results of this study show that the respondents have used antibiotics before. Thus, it was manifest that the answers to the questionnaire corresponded to the reality of the actual use of antibiotics. The most widely used was amoxicillin, i.e. 398 respondents (99.5%). Our findings are in line with the results of another study showing that all patients (108 patients) have used antibiotics without a prescription and had a low level of awareness. The most purchased antibiotic without a prescription is amoxicillin (Fernandez, 2013). It is also the most widely used by community service participants, i.e. 11 people (45.83%) (Djuria & Sinulingga, 2019).

Analysis of data on the use of antibiotics in respondents shows that at the time of pre-test measurement, most people who misused antibiotics were in Gabek district, nine people (15.8%), while the least was in Rangkui district, one person (1.8%). In the post-test measurement, most people who misused antibiotics were in Gabek district, three people (5.3%), while the least was in Pangkalbalam and Taman Sari districts, non (0%), indicating that all of them used antibiotics appropriately.

This result indicates that most respondents are highly educated, namely 266 people (66.5%) (Table I). Education is needed to get information, for example, about things that support health to improve the quality of life. In general, the higher a person's education, the easier it is to retrieve information (Nursalam, 2010).

All respondents declared having received information about antibiotics use. The source of information was printed media (13 respondents, 3.25%), electronic media (15 respondents, 3.75%), but mainly non-media-based (health workers, neighbours, family, and friends), with 391 respondents (97.75%) (Table I). People with higher education will easily accept information, especially information about them (Nursalam, 2010).

Most respondents were adults 26-45 years old (180 participants, 45%) (Table I). Among older people, the memory factor considerably affects one's knowledge. The level of maturity and strength of a person depends on age. The elder would be more mature in thinking and working. Therefore, respondents will regularly increase their knowledge so that they can change their behaviour. Most respondents worked, namely 206 people (51.5%) (Table I). As work is a means to support one's and family life, working respondents earned

money and could buy antibiotics when they felt sick. Therefore, all respondents have used antibiotics.

A study showed a low awareness regarding prescription medicine, antibiotic use, and AMR among the general population in the highland provinces of Vietnam (Ha, Nguyen & Nguyen, 2019). These findings indicate the need for further systemic and didactic educational interventions targeting females, ethnic minorities, those with low education, low income, and those working in the agriculture/fishery/forestry sector in this setting to improve awareness about antibiotic use and resistance.

The t-test analysis showed a significant difference in antibiotics use in pre-test and post-test among all respondents (Table II), indicating that public service advertisements are effective in reducing antibiotics misuse. These results are consistent with previous findings on the influence of advertising messages, advertising sources/models, and ad execution on attitudes, showing that the three variables simultaneously have a positive and significant effect on the attitudes of faculty students (Mustika & Zakaria, 2012). Moreover, four public service advertisements received high enough attention from the public, namely: Traffic Orderly Ads, Amnesty Tax, Report Hendy, and Saber Pungli (Mukaromah, Yanuarsari & Pratiwi, 2017). Simultaneously, the attractiveness of advertisements, the quality of advertising messages, and the frequency of ad serving moderated by the effectiveness of advertisements have a significant effect on the attitudes of other people (Libradika, 2015).

It seems essential that future antibiotic awareness campaigns base their messages more rigorously on scientific evidence, context specificities, and behavioural change theory. A new generation of messages that encourage first-choice use of narrow-spectrum antibiotics is needed, reflecting international efforts to preserve broad-spectrum antibiotic classes. Evaluation of the influence of antibiotic awareness campaigns remains suboptimal (Huttner *et al.*, 2018).

In 2015, a study among the general population of the UK highlighted several issues to be considered when communicating the issue of AMR to the public (Trust, 2015). Another research shows that the framing of antibiotic resistance in the TV advertisement led to an increase in misunderstandings of what becomes resistant to antibiotics (Borgonha, 2019). The advertisement helped to highlight the vulnerability of antibiotics and create a new social norm about being a responsible antibiotic user. However, it was interpreted as childish by participants. It did not communicate the severity of antibiotic resistance or specific risk of antibiotic overuse to the audience or accurately reflect the audience's existing knowledge of antibiotic resistance and current behaviours. As the severity of antibiotic resistance was not conveyed, the advertisement did not motivate a change in antibiotic-seeking behaviours or attitudes among most participants. The findings highlighted knowledge gaps among study participants; they were unaware of the importance of completing the antibiotic course, and they thought that humans develop resistance, not bacteria (Borgonha, 2019).

Effective communication plays a remarkable role in improving community awareness about important healthcare issues (Mathew, Sivaraman & Chandy, 2019). But increasing awareness alone does not result in significant behaviour change unless the issues are addressed holistically. The messaging should be culturally relevant and adapted to the preferences of the target population. Even though a multi-stakeholder approach is preferred, specific leadership responsibilities should be assigned in the whole communication process. The role of champions and social influencers is essential in deciding the success of messaging, as their presence adds a layer of credibility to the whole exercise. In the case of AMR, it is pertinent that the messaging strategy should not be high-jacked by commercial entities who have conflicting interests in the sector. Even though professional and industry groups can be allies in a potential communication campaign on AMR, care should be taken to ensure that the process is free of any conflicts of interest. More importantly, it is pertinent to accept that awareness is just one part of the entire behaviour change process, and the targets for the communication campaign should not be restricted to raising awareness.

Finally, the application of findings in surveys and associated factors related to antibiotic use and AMR should primarily generate public health interventions and target specific groups to make progress in solving AMR problems and maximise the use of surveys (Kosiyaporn *et al.*, 2020).

Conclusion

Public service advertisements about antibiotics were effective in terms of antibiotics use.

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