

BESSH-18

The Concordance of Perception about Dog Bite Effects and Practices after Dog Bite in Victims, Chiang Mai, Thailand: The Participatory One-Health Disease Detection (PODD) Project Setting Area

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Abstract

Dog bite injury is the one important public health concern especially in rabies endemic areas such as Asia. The negative impacts of dog bite include rabies virus inoculation, wound infection, psychological problems or other somatic disabilities. Thailand is one of rabies endemic country and canine population which is rabid mammals still circulate in community. The perception of rabies prevention program is necessary and reflect the successful of the prevention campaign in communities. The objective of this study was to access the perception of victim practices after dog bite and their perception of negative impacts to victims. The cross-sectional study was conducted during January 2015 to December 2016. Twenty-one participants who Participatory One Health Disease Detection (PODD) volunteers were invited into study. We created the perception's ranking table and keyword cards for the participation. The victims ordered the key word card and discussed with their ordering. The ranking and discussing data were collected and analyzed by Kendall coefficient of concordance. Only nine participants (42.86%) knew or accustomed the details of dog bite prevention campaign. We significantly found of concordance in both topics; the effect of the bite that victims most concern was rabies virus infection (mean rank = 1.64, Kendall's W = 0.63, $p < 0.05$) and the foremost priority that they practice after bite was wound washing with clean water (mean rank = 1.45, Kendall's W = 0.51, $p < 0.05$). We suggested that knowledge of the rabies prevention program and the practice knowledge of victim after the bite were approximated trend and novel implements for the dog bite prevention campaign advertising to community should re-establishing.

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Keywords— Dog bite, Rabies, Perception, Participatory One-Health Disease Detection (PODD), Kendall Coefficient of Concordance

Introduction

Rabies is one of neglected zoonotic [2] and vaccinated preventable disease. The zoonotic disease is a fatal encephalitic that most countries around the world aware and desire to eliminate from country. Dog bite is an important public health concern especially in rabies endemic countries including Thailand since the virus is mostly infected human via animal bite [3], especially dog bite. Dog bite problem related to others and one-health that complementing between human and other species in ecology and encouragement between animal control and public health policies [4]. The closely interaction with companion pet, almost in children was one risk factor of bite [5], and numerous persons are still belief in the wrong information of the dog bite [6]. The other effects caused by dog bite are bacterial wound infection, psychological disorders, disability or disfigurements.

Thailand public health authority has launched the campaign in many ways e.g. leaflet, poster or public notice by local public health workers, local government official staffs, volunteers or head of villager for avoiding dog bite and rabies post-exposure prophylaxis. The campaign called "Five don't" including do not making dog aggressive, angry, frighten or scared, do not step on dog, do not separate dogs when fighting, do not pick the dog's food tray during their meal and do not play or touch stray dogs. Rabies post-exposure prophylaxis is included following steps i.e. wound washing and cleaning, apply disinfectant such as povidone iodine, consult public health officer, quarantine the animal, and vaccinate post exposure prophylaxis.

Those knowledge of local people in community on dog bite and rabies prevention such as bite management and protection or anti-rabies vaccination is necessary for national rabies prevention and control [6] as well as perception of people which leads to create practice of people after dog bite. The perception on dog bite and rabies prevention are also important to reflect the success of the campaign which were intervened into communities.

This study aims to access the perception of victim's practices after dog attack and dog bite negatively impact a dog bite victim. We focused on the victims who were reported by the Participatory One-Health Disease Detection (PODD) system. PODD was a one-health related project that established the community-owned digital surveillance

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tools. The PODD has applied one-health concepts for collaboration in community among animal health, human health and environmental health. The PODD volunteers play a role as key person who drive the surveillance system in community with their local government agencies: local public health organizations and local government organizations. PODD volunteers were trained to detect and report abnormal events related to health via their smart phone. Dog bite is one of abnormal event which is monitored and reported via PODD system. The report and response systems as shown in FIGURE 1. The biting victims was reported via PODD smart phone application, details of them were collected in PODD database called "PODD dashboard". Dashboard is used for report follow up and management by local authorities and epicenter which refers to the central office for suggestion system working. This pilot project initiates in seventy-four sub-district areas.

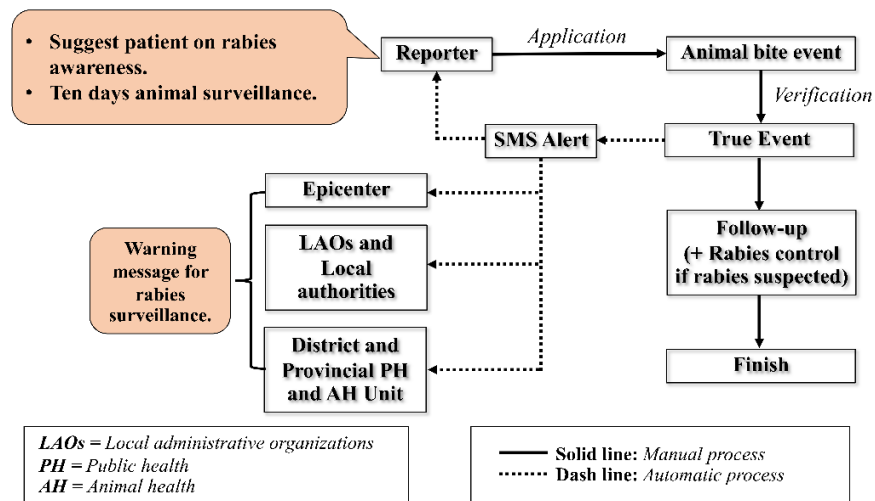


Figure 1: Dog Bite Event Process Flow of PODD Surveillance System

Methodology

Study Area, Target Sample, Sampling Method and Sample Size

The cross-sectional study was conducted during January 2015 to December 2016. The study area was in eleven sub-districts in nine districts of Chiang Mai province those reported dog bite events to the Participatory One-Health Disease Detection (PODD) project. The victims who were reported to PODD surveillance database were recruited to be our subject and the name list of the victim was provided by PODD project. Total seventy-six dog bite cases were reported to the system and twenty-one dog bite victims were consented for data collection and subjected to be our informants.

Data Collection

Twenty-one informants were interviewed on their perception of practice after dog bite and the consequent negative impacts on their life after dog bite. We created the perception's ranking table and the items of dog bite prevention and rabies prevention were written down on the cards so called as "keyword cards". Two sets of keyword card were used for ranking including dog bite effect set and practice after bite card set. The victims participated in keyword card ranking. After ranking was complete, we discussed with participant with their ordering one by one. The ranking and discussing data were collected in paper and recorded the interview using digital voice recorder. The recorded interviews were translated into Microsoft excel version 2016 and all of data were concealed in confidentiality.

Data Analysis

The raw data were recorded into spreadsheet of Microsoft excel 2016 and recorded data were analyzed using Kendall coefficient of concordance (W) by IBM SPSS Statistics 23. Kendall coefficient of concordance use to find relationship between informant's perception and items from the national campaign. Kendall coefficient of concordance range from zero to one. If variable is related or completely compatible, value is closed to one and if not, value would be closed to zero. The statistical significance was considered as $p < 0.05$. Interpretation of Kendall coefficient of concordance as in TABLE 1.

Table 1:
Interpretation of W Value and Level of Agreement (adapted from M. Kraska-Miller, 2008, p.191). [7]

Kendall coefficient of concordance (W) value	Interpretation
0	No agreement
0.1	Weak agreement
0.3	Moderate agreement
0.5	Strong agreement
1.0	Complete agreement

Results

The general information i.e. age, gender, occupation, and living area location of 21 informants were represented in TABLE 2. Informants were 5 children (23.8%) less than 10 years old, 6 (28.5%) in middle age (27-55 years old) and 9 (42.8%) elderly people. The occupations were included students, canine seller, farmer, public health volunteer, livestock volunteer, driver, and unemployed. Five victims have lived in urban area and sixteen have lived in rural area.

Table 2:
General Information of all Informants

Participant Code ^Δ	Age	Gender	Occupation	Location
7EDNDG3K	<10	F	Student	R
NGK35SZU	<10	F	Student	R
U7E4KPPV	<10	M	Student	U
MM95JGNW	<10	M	None	U
LCDQ43TV	<10	F	Student	U
735PYU68	27	F	Canine seller	R
LDP9CB6Q	43	F	Farmer	R
V6PWBS7D	48	F	Volunteer	U
4L82HGRV	49	M	Volunteer	U
WZBZVUGR	51	F	Farmer	R
PQS4PVZA	55	M	Farmer	R
H4YVJTJW	65	M	Driver	R
UB7N5UVE	69	F	Unemployed	R
TUNCHQXW	70	M	Farmer	R
BVBZX52L	72	F	Unemployed	R
G6H2F3PF	72	F	Unemployed	R
P6QF69WT	75	F	Employee	R
PWZJ88N3	82	M	Farmer	R
VDEPXRGP	86	F	Unemployed	R
7FQN8A4P	88	F	Unemployed	R
8XA9F3DU	NA	M	Farmer	R

^Δ code was generated using online randomize website.

M, male; f, female; U, urban setting; R, rural setting; NA, not available.

We tested the statistical hypothesis under 95% confidence interval and $p < 0.05$ was considered as the significant level. Kendall coefficient of concordance (Kendall's W) is the agreement degree of rank which the value represented in range from 0 to 1 (0 = disagree level and 1 strongly agree level).

We found only nine (42.86%) participants knew or accustomed the details of dog bite prevention campaign. For the perception on negative impacts to livelihood after dog bite, Rabies inoculation, microbial wound infection, absence from work or school, losing income and disfigurement were listed. We significantly found of concordance in both topics; the effect of the bite that victims most concern was rabies virus infection (mean rank = 1.64, Kendall's W = 0.63, $p < 0.05$) and FIGURE 2. show the details of each objects about effects of dog bite.

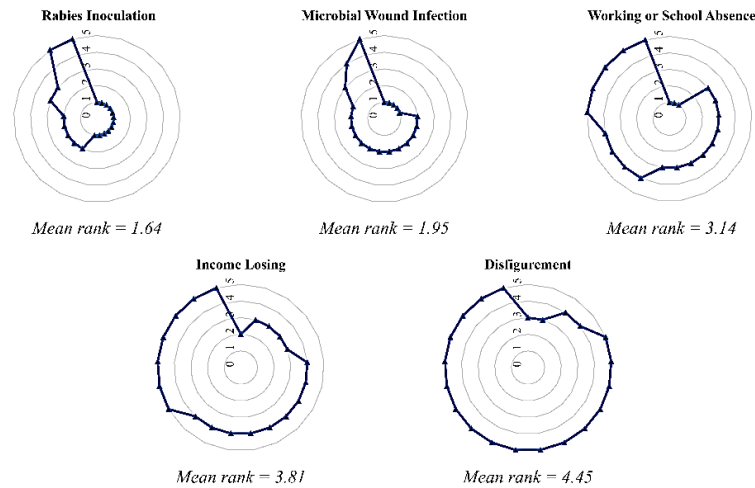


Figure 2: Show the Ranking Distribution of Dog Bite Effects; the Number in the Circle Represent the Degree of Rank (1 = strongly effect and 5 = weakly effect) and □ Represent for each Participated Ranking

About the practices after bite, wound washing, consult health practitioner, topical drug application, anti-rabies vaccination, and quarantine dogs were listed. We found that the first priority that victims would like to practice was wound washing with clean water (mean rank = 1.45, Kendall's W = 0.51, $p < 0.05$). FIGURE 3 showed the details of each objects in practices after bite.

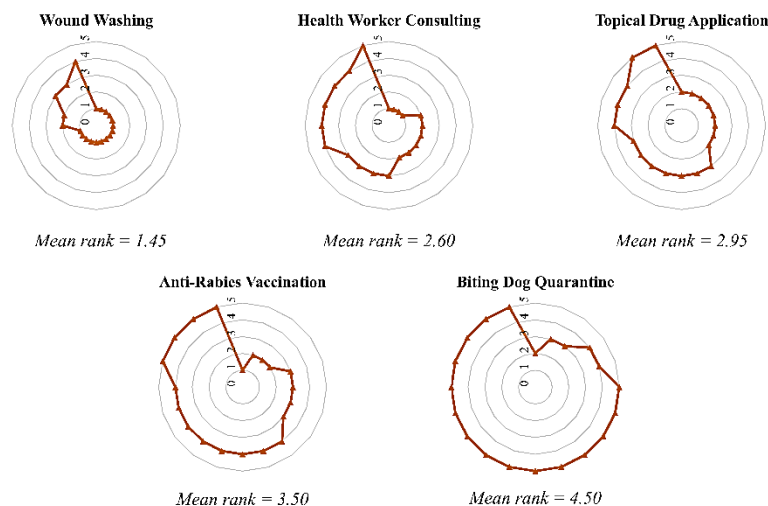


Figure 3: Show the Ranking Distribution of Practices after Bite; the number in the Circle represent the Degree of Rank (1 = prime priority to do and 5 = last priority to do) and □ represent for each Participated Ranking

Discussion and Conclusion

The most dog bite effect was infection particularly rabies but most of participants were not clearly know rabies detail, they knew only the name. Herbert's study discovered around 70% of sample ever heard rabies and half of them know as a fatal disease [8]. Rabies in Thai means mad dog, all participants afraid that they might be a mad like a psychological problem person. This is a reason that they concern more than other effects. Most of participants were misunderstand some details of rabies. There are gaps of knowledge especially perception about dog behavior or corrected PEP protocol [9]. Bacterial wound infection was a one effect that wakeful, some of participants had some chronic disease such as systemic hypertension or diabetes mellitus (D.M.). The D.M. participants were extremely anxious about their wound because these victims were fostered when the wound occurred, it might be infected and invaded. These was the cause of organ remove and disability. The income losing and working, or school absence were related together but only a few participants concerned, except in victims who were employee or non-government officers. The reason is that if the biting effect to their movement and work, they might absent for rest. The absence effects to getting of income because some of them receive the income in daily. The disfigurement was the topic that participants was not think about that can be affect for their daily livelihood. They suggest that this effect was important in the victims who was bitten on the face or severe attack.

The first step of practice after the bite was wound washing. Most of participants washed the wound with clear water but only some of them applied this importance step with any detergents such as soap. The elder participants frequently trust the physician care, these were not immediately wash the biting wound because they wished to manage by medical workers. Anti-rabies vaccination is still being needed when the bite occurred. Lunney study in Cambodia found 93% of participants knew rabies and 50% aware to inject anti-rabies vaccine in dogs [10]. The topic of dog quarantine was still ignored because some dogs were stray dogs and could not follow. The study of slum area in India found that first aid that victims frequently practice was wound washing, physician consulting and rest respectively but about half of them aware to receive post-exposure vaccination [11]. The contributor opinions in other Lunney research found 78% of dog bite problem affect to physical risk and 88% mention as a risk of infection. However, the owned biters were still neglected, it might form the trustworthiness with the familiar dogs or they believed that the dogs were vaccinated, rabies virus might not be inoculated. This situation was suspense that the bite from closed or owned dogs might be the vaccination ignorance. Some part of this study reflected about lack of rabies knowledge in participants. Lack of zoonotic disease that transmitted via dog might affect to victim health, the measure for public relation should concern [12], particularly rabies from bite.

We suggest that knowledge of the rabies prevention program and the practice knowledge of victim after the bite were the similar trend and novel implements for the dog bite prevention campaign advertising to community should re-establishing. The measure of public relation of disease knowledge and prevention campaign should be chosen to proper context and culture of each area and working process of local authorities, coordinate on one-health concept. The applied interweaving between community culture such as routine tradition or annual festival with academic measure might motivate villager to easily learn the academic content and increase the interest.

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