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RESIDENT'S KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS SOLID WASTE MANAGEMENT IN JOHO SUB-DISTRICT ADMINISTRATIVE ORGANIZATION, MUEANG DISTRICT, NAKHON RATCHASIMA, THAILAND

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Abstract— **This research aimed to explore knowledge, attitude and practice on solid waste management in Joho Sub-district Administrative Organization, Mueang District, Nakhon Ratchasima, Thailand. The collection data using questionnaire from 54 family samples. Analyses of research data employed descriptive statistics and Chi-square. The research was conducted during October - December 2014. The results showed that the samples knowledge level were on moderate level ($\bar{x}$= 14.33, SD = 2.65), the attitudes were high level ($\bar{x}$= 2.44, SD = 0.28) and practices ($\bar{x}$= 2.40, SD = 0.29) were on high level. The relationship between attitude and practice was significantly statistically)p<.05.(Therefore, the local government should promote knowledge on effective solid waste management, in order to avoid environmental consequences in the future.**

***Keyword*— Knowledge, Attitude, Practice, Solid Waste Management**

I. INTRODUCTION

At present, the increasing of population and the growth of the community caused by economic development were the root cause of solid waste problems increasingly and both directly and indirectly affecting to the quality of life of the people and the environment [1]. In 2013, the Pollution Control Department conducted a survey on the volume of solid waste generated in the country using questionnaires and field surveying. The target group of the survey was 7,782 Local Administration Organizations (LAOs) throughout the country including 2,273 municipalities and Pattaya City, 5,508 Sub-district Administrative Organizations (SAO), and Bangkok Metropolitan Administration (BMA). The results showed that the volume of Municipal solid waste (MSW) generated in 2013 was about 26.774 million tons, or about 73,355 tons a day. The volume can be divided into the solid waste generated in BMA at about 4.137 million tons (16%), the solid waste generated in municipalities and Pattaya City at about 10.241 million tons (38%), and the solid waste generated in SAO at about 12.396 million tons (46%) [2].

Out of 7,782 local administration organizations, 4,179 (54%) of them provided waste transport and disposal services. About 7.421 million tons, or 20,332 tons per day, equal to 52% of the total volume of the collected waste is delivered to suitable waste management facilities. On the other hand, 6.938 million tons, or 19,008 tons a day,equal to 48% of the total volume of the collected waste, especially in small LAOs, were unsuitably disposed of by open burning or open dumping into old abandoned pits or undeveloped areas. In 2013, the MSW situation in Thailand has shown the tendency of becoming even worse due to the volume of waste that has been growing every year paralleling with the growing number of population, national economic growth, and changes in consuming behaviours of people. Moreover, only 4,179 LAOs provide waste transport and disposal services. The number is only about 54% of the entire number of more than 7,700 LAOs throughout the country. Besides, some of the waste collected within the serviced areas of some LAOs was not suitably disposed of by openly burnt or openly dumped in an old pit or undeveloped area without proper control and management. This action might affect the environment of the surrounding areas and people in the neighborhood of the unsuitable dumpsites. As for the local administrative organizations that did not provide any waste management services, people in the areas need to be responsible for their household waste, and some of them might illegally dump the waste in public areas or by the roadside [2].

Joho SAO is located in Joho sub-district, Mueang district, Nakhon Ratchasima. It is 13 kilometers (km) from the Nakhon Ratchasima provincial hall, it has an area of 26.97 km^2, subdivided into 9 villages, with 4,970 family, and a registered population of 13,048 people. In 2013, solid waste generation rating about 13 tons per day, an average of 0.99 kg per person per day. Solid Waste Management (SWM) requires a budget of

up to 1.8 million baht per year [3]. Also found that the solid waste residues in the community, both in solid waste bin and dropping on ground around the village. A consequence affect such as; clogged drain, a stink, a breeding for disease vectors, obstructing the drainage system caused flooding. In addition, Joho SAO area was a semi-urban areas, a growing business of the housing. As a result, the population was increasing and the solid waste generation rate increases too.

Therefore, this descriptive research aimed to explore knowledge, attitude and practice on SWM in Joho Sub-district Administrative Organization, Mueang district, Nakhon Ratchasima, Thailand; to make a preliminary plan to resolve the problem of SWM appropriate to the context, social and cultural practice of Joho SAO. As a results, SWM were efficient and sustainable.

II. Materials and Methods

A. *Research areas and Research design*

This descriptive research was performed in Sumrong village, Joho sub-district, Mueang district, Nakhon Ratchasima, Thailand. It is located in the northeast region of Thailand which is approximately 274 km from Bangkok; capital of Thailand, and 15 km from Nakhon Ratchasima. This village was covered 1.46 km^2, 77 families, and 301 population.

B. *Population, sample size, and sampling*

The 54 family samples were purposely selected from 77 families. The research was conducted during October - December 2014

C. *Instrument*

This research used questionnaire developed by the researcher, which consisted of 60 items divided into four dimensions: Knowledge of SWM (20 items), Attitude of SWM (20 items), and Practice of SWM (20 items). The dimension of knowledge was composed to three choice (right, wrong and unknown) and each correct respond receives a score of 1 while each incorrect and unknown respond receives 0. Possible score of this dimension range from 0-20 scores. The dimension of attitude and practice were based on a 3-point Likert-type scale; 3 for "agree", 2 for "undecided" and 1 for "disagree". The coding of the items containing a negative statement was reversed 3 for "disagree" and 1 for "agree".

D. *Statistical analysis*

Descriptive statistics and Chi-square were analysed with SPSS software.

III. Results

A. *Profile of Samples*

Table 1 showed that the most of samples were female (74.07%), 60-69 years old (25.93%), finished primary school level (66.67%), married (72.22%), employee (48.15%), family health leader (77.78%), and income lower than 10,000 Baht per month (40.74%).

Profile of samples

Characteristic	Value	Percentage
Gender		
Male	14	25.93
Female	40	74.07
Age		
20-29	4	7.41
30-39	5	9.26
40-49	13	24.07
50-59	12	22.22
60-69	14	25.93
≥ 70	6	11.11
Education		
Primary	36	66.67
Secondary	9	16.67
Diploma	3	5.55
Bachelor	6	11.11
Marital status		
Married	36	72.22
Divorced , Widow	9	16.67
Single	6	11.11
Occupation		
Employee	26	48.15
Agriculture	10	18.52
Own business	5	9.26
Liberty	5	9.26
Government officer	4	7.41
Private company	4	7.41
Status		
Family Health Leader	42	77.78
Community leader	12	22.22
Income		
< 10,000 Bht.	22	40.74
10,000 – 20,000 Bht.	19	35.19
20,001-30,000 Bht.	8	14.81
> 30,000 Bht.	5	9.26

B. Knowledge of SWM

Table 2 showed that the samples knowledge level were on moderate level ($\overline{x}$= 14.33, SD = 2.65), and the most knowledge level were moderate (57.41%).

KNOWLEDGE LEVEL OF SAMPLES

Knowledge level	Value	Percentage
High	15	27.78
Moderate	31	57.41
Low	8	14.81
$\overline{x}$= 14.33, SD = 2.65		

C. Attitude of SWM

Table 3 showed that the samples attitudes were at high level ($\overline{x}$= 2.44, SD = 0.28), and the most attitudes level were high (62.96%).

ATTITUDE LEVEL OF SAMPLES

Attitude level	Value	Percentage
High	34	62.96
Moderate	20	37.04
$\overline{x}$= 2.44, SD = 0.28		

D. Practice of SWM

Table 4 showed that the samples practices were high level ($\overline{x}$= 2.40, SD = 0.29), and the most practices level were high (64.81%).

PRACTICE LEVEL OF SAMPLES

Practice level	Value	Percentage
High	35	64.81
Moderate	18	33.33
Low	1	1.85
$\overline{x}$= 2.40, SD = 0.29		

E. Relationship

Table 5 showed the relationship between attitude and practice was statistically significant)p<0.05.(

PRACTICE LEVEL OF SAMPLES

Attitude level	Practice level		Chi-square	Sig.
	High	Moderate		
High	27	7	8.577	0.003*
Moderate	8	12		

IV. DICUSSION

The samples knowledge of SWM level are on moderate level (57.41%), similar to previous study [4]. Asmawati Desa and others had study on the knowledge, attitudes, awareness status and behaviour concerning SWM, the results showed that the knowledge, attitudes, awareness status, behavior and practice concerning SWM were moderate. Also, the attitudes (62.96%) and practice (64.81%) of SWM are high level, difference from previous study [4] but similar to previous study [5]. Latifah Amin and others had study on the knowledge, attitudes, awareness status and behaviour concerning SWM, the results showed that the level of awareness and knowledge have increased, especially with regard to familiar issues.

The relationship between attitude and practice was significantly statistically ($p<0.05$). These results indicate that attitude and practice has significant influence to SWM.,similar to previous study [6]. Ratni Prima Lita and others had study on green attitude and behavior of local tourists towards hotels and restaurants in West Sumatra, Indonesia, the results show that the effects of attitude toward green behavior on overall image are positive (0.446) and significant at the alpha of 0.08, with the t-statistic of 4.804.

V. CONCLUSION

The finding of this research shows that the knowledge of SWM level are on moderate level, but the attitudes and practice of SWM are high level, and the relationship between attitude and practice was statistically significant. Therefore, the local government should promote knowledge on effective solid waste management, in order to avoid environmental consequences in the future.

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