A STUDY TO IDENTIFY AND COMPARE THE MOSQUITO BREEDING PLACES AND THE CONTROL MEASURES ADOPTED AMONG HOUSEHOLDS AT SLUM AND NON SLUM URBAN AREAS IN COIMBATORE.

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Abstract : Introduction:A descriptive study was conducted to identify and compare the mosquito breeding places and the control measures adopted among households at slum & non slum urban areas in Coimbatore.The main objectives of the study were to identify the mosquito breeding places and mosquito control measures adopted among households in slum & non slum areas and to compare the mosquito breeding places and the mosquito control measures adopted in household in slum &non slum areas. ***Methodology:*** By using Descriptive Survey design 100 samples of age group (20 – 60 years) were selected using convenient sampling techniques for 1 week from 18.04.2016 to 22.4.2016.The study was carried out in slum areas namely AD-colony, Nehru Nagar and Non slum areas namely Giri Amman kovil street, and Pioneer mill road in Coimbatore.***Result:***Common mosquito breeding places identified in slum areas are opened water storage pots, tanks 42 houses (92%), Hanging clothes 30 houses (60%), stagnant water in coconut shell 25 houses (50%) stagnant water in grinding stone 25 houses (50%) Garbage without lid 50 houses (100%) and Waste plastic cover 50 houses (100%).Common mosquito breeding places identified in non slum areas are flower vases 30 houses (60%), Opened water storage pots, tank 30 houses (60%), Stagnant water in coconut shell 28 houses (56%) Stagnant water from refrigerator 29 houses (58%), presence of broken bottle and plastic containers 28 houses (56%), Garbage without lid 50 houses (100%), Waste plastic covers 50 houses (100%).Common mosquito control measures adopted in slum areas are 50 houses (100 %) removed the garbage every day, 28 houses (56%) used mosquito coils. Common mosquito control measures adopted in non slum areas are 21 houses (42%) coveted the storage the pots, tanks, 23 houses (46%) drained the water from refrigerator, 50 houses (100%) removed the garbage,17 houses (39%) used mosquito coils.The study result showed that there was no significant difference in mosquito breeding places ($t= 0.06$, $p< 0.05$) in slum and non slum areas. There is significant difference in mosquito control measures ($t=2.72$, $p<0.05$) in slum and non slum areas. ***Conclusion:*** It is found that mosquito breeding places were identified both in slum and non slum areas, the result showed that they only differ in the breeding sites in both the areas. The mosquito control adopted in slum and non slum areas are not adequate to destroy the breeding areas of mosquitoes. Awareness programmes need to be planned to reduce the incidence of mosquito borne diseases.

Key Words: Mosquito breeding places, Mosquito control measures

I. INTRODUCTION

"Prevention is better than cure"

Majority of the world's population live in areas which are at the risk of insect borne diseases, majority of diseases are spread through mosquitoes. Various environmental factors like urbanization, Increased migration and climate change causes vectors to involve in transmission of the diseases. Discarded tyres, water tanks, flower pots, jars, coconut shells and ant traps are the most dominant breeding sites of mosquitoes (Shabnam-2014)

Destroying the breeding areas of mosquitoes aid in reducing the incidence of mosquito borne illness. Deforestation and industrialized framing are also two of the factors causing an alarming increase in the range mosquitoes. (Patel 2012).

Looking at the seriousness of the situation World Health Organization declared "vector borne diseases- small bite big threat". As the theme for the year 2014 on world health day to highlight importance of measures for prevention and community - based action. Primary prevention of transmission of mosquito borne diseases is crucial to decrease the burden of diseases. (WHO-2014)

II NEED FOR THE STUDY:

Mosquitoes can be found all over the world and commonly known to pose a significant threat to public health. The biodiversity of mosquitoes is very evident, with many genera having worldwide distribution and some genera with limited or endemic distribution. The common fear for mosquitoes is their role as vectors that can spread diseases such as dengue, malaria, filariasis, yellow fever, and Japanese encephalitis (M. SofianAzirun 2014).

Worldwide nearly 390 million dengue cases are reported every year. Recently the number of reported cases continued to increase. In 2013-80,000 of dengue were reported in India alone of which 37,687 were affected severely. According to the world malaria report 2014, 22%(2.75 million) of India population live in high transmission (> 1 case per 100 population).

Mosquito Borne Infection:

An estimated 50 million dengue infection occur worldwide annually and about 5,00,000 people with dengue hemorrhagic fever require hospitalization each year.Approximately 90% of them are children aged less than 5 years, and about 2.5% of those affected die. Every year during epidemics, infection rate among those who have not been previously exposed to the virus are often 40-50%, but can also reach 80-90%.

According to the latest estimate, there were about 198 million(124-228 million) cases of malaria in the year 2013 and an estimated 584,000 deaths (367,000-755,000) malaria mortality rates have fallen by 47% globally since year 2010, and by 54% in the WHO African region.

Coimbatore city has reported several cases of mosquito borne diseases increasing after the brief spell of rains. (Pratiksha Ramkumar-2014). The Coimbatore corporation area is notorious for mosquito borne disease. There by we attempts to assess the mosquito breeding areas and control measures practiced by the people. Survey method will be used for the collection of data. The study would from an important information document and help in successful planning and implementation of the future mosquito control programmes.

III.STATEMENT OF PROBLEM:

A study to identify and compare the mosquito breeding places and the control measures adopted among households at slum and non slum urban areas in Coimbatore.

IV. SPECIFIC OBJECTIVES:

1. Identify the mosquito breeding places among households in slum& non slum areas.
2. Identify the mosquito control measures adopted in household in slum & non slum areas.
3. Compare the mosquito breeding places among households in slum & non slum areas.
4. Compare the mosquito control measures adopted in household at slum & non slum areas.

V. RESEARCH APPROACH:

- Survey approach was used in this study.

5.1 RESEARCH DESIGN:

Non experimental Descriptive research design was used to identify and compare the mosquito breeding places and control measures adopted in households in slum and non slum urban area in Coimbatore.

5.2 SETTING OF THE STUDY:

The study was conducted among adults of the age group (20 – 60 years) in slum and non slum areas in Coimbatore. Slum areas selected for the study were AD Colony, Nehru Nagar. Non slum areas selected for the study were Giri Amman Kovil Street, Pioneer mill road in Coimbatore.

5.3 POPULATION OF THE STUDY:

Population included are all the adult people age (20 – 60 years) residing in households at slum and non slum area in Coimbatore.

5.4 SAMPLING:

Sample: Adult age group (20 – 60 years)
Sample size: 95

Sample size determination:

Precision formula:

$$= \frac{Z^2 p(1-p)}{d^2}$$

Z(Level of confidence) = 1.96

p(prevalence) = 0.72(72%) [Prevalence of mosquito borne diseases Park Text book of 'preventive and social medicine' 22nd edition]

d(precision) =0.09

$$= \frac{1.96 \times 1.96 \times 0.72 (1- 0.72)}{0.09 \times 0.09}$$

$$= \frac{3.88 \times 0.72 (0.28)}{0.0081} = 95$$

Sample size = 95

5.5 Sampling technique:

Convenient sampling was used in this study.

5.6 Sampling criteria:
Inclusion criteria:

- People who know Tamil.
- People who are willing to participate in the study.

Exclusion criteria:

- All locked houses.

5.7 DEVELOPMENT OF TOOL:

Based on the review of literature, discussion with experts and with investigator's personal and professional experience a checklist consisting of 15 mosquito breeding places and 20 mosquito control measures question was developed.

5.8 TECHNIQUES OF DATA COLLECTION:

Data was collected by using structured interview schedule from members residing in households. The data was collected for 1 week. (18.04.2016 – 22.4.2016).

Scoring Interpretation:

Section A: Demographic data was analyzed using frequency and percentage distribution.

Section B: For each question "one"mark was allotted if there was presence of mosquito breeding place and "zero" mark was allotted if there was no presence of mosquito breeding place in each house in slum and non slum area.

Section C: For each question "one" mark was allotted if the family adopted mosquito control measures and" zero" mark was allotted if the family did not adopt mosquito control measures in slum and non slum area.

Finally the score were compared between slum and non slum area.

5.9 ETHICAL APPROVAL:

- Ethical clearance was obtained from IHEC
- Informed consent was obtained from the study samples.
- The subject were informed that the confidentially of the data will be maintained.

VI.RESULTS:

The data is classified into:

Section A: Demographic data.

Section B: Identification of mosquito breeding places in slum and non slum area.

Section C: Identification of mosquito control measures in slum and non slum areas.

Section D: Comparison between the mosquito breeding places and mosquito control measures in slum and non slum areas.

SECTION A: Table: 6.1
Frequency and percentage distribution of selected demographic variables

n=100

S.No	Demographic Data	Slum		Non Slum	
		Members	%	Members	%
1	**Age**				
	20-30 years	10	20	10	20
	30-40 years	16	32	10	20
	40-50years	09	18	16	32
	50- 60 years	15	30	14	28
2	**Sex**				
	Male	0 5	10	10	20
	Female	45	90	40	80
3	**Educational status**				
	Illiterate	22	44	09	18
	Primary high school	11	22	22	44
	Higher secondary school	14	28	14	28
	Graduate	03	06	03	06
4	**Occupation**				
	Unemployed	21	42	29	58
	Private	14	28	13	26
	Coolie	15	30	8	16
5	**Marital Status**				
	Married	49	98	48	96
	Single	01	2	02	04
6	**Income**				
	>5000	14	28	02	04
	5000-10,000	33	66	28	56
	10.000-15,000	02	04	18	36
	15,000-20,000	01	02	02	4
7	**Living Area**				
	Slum	50	100	-	-
	Non slum	-	-	50	100
8	**Types of Family**				
	Joint family	08	16	06	12
	Nuclear family	42	84	44	88

6.1 Socio demographic variables:

Among 100 people, 10 members (20%) are from slum and 10 members (20%) are from non slum area are between the age group of 20-30 years. 16 members (32%) are from slum and 10 members (20%) are from non slum area are between the age of group of 30-40 years. 9 members (18%) are from slum and 16 members (32%) are from non slum area between the age of group of 40-50 years. 15 members (30%) are from slum and 14 members (28%) are from non slum area between the age of group of 50-60 years.

Among 100 people, 5 members (10%) are from slum area and 10 members (20%) from non slum area are male. 45 members (90%) from slum area and 40 members (80%) from non slum area are female.

Among 100 people, 22 members (44%) from slum area and 9 members (18%) from non slum area are illiterate. 11 members (22%) from slum area people and 22 members (44%) of non slum area people have completed their primary schooling. 14 members (28%) slum area and 14 members (28%) from from non slum area people have completed higher secondary.3 members (6%) from slum area and 3 members (6%) of non slum area are graduate.

Among 100 people,21 members (42%) of slum area people are unemployed and 29 members (58%) from non slum area are unemployed. 14 members (28%) of slum area people and 13 members (26%) from non slum area are working in private companies. 15 members (30%) of slum area people and 08 members (16%) of non slum area are coolie worker.

Among 100 people,49 members (98%) of slum area and 48 members (96%) of non slum area are married. 1 member (2%) slum area and 2 members(4%) of non slum area are unmarried.

Among 100 people, 14 members (28%) from slum area and 2 members(4%) of non slum area earn less than Rs. 5000/ month. 33 members (66%) from slum area and 28 members (56%) of non slum area earn between 5000-10,000.2 members (14%) of slum area people and 18 members (36%) of non slum area people earn between 10,000-15000. 1member (2%) from slum area and 2 members (4%) of non slum area earn between 5,000-20,000.

Among 100 people,50 members (100%) are residing in slum area and 50 members(100%) are residing in non slum area.

Among 100 people, 8 members (16%) from slum area and 6 (12%) members of non slum area people belong to joint family. 42 members (84%) from slum area and 44 members (88%) of non slum area people belong to nuclear family.

SECTION-B Table 6.2

Descriptions of mosquito breeding places in slum and non slum area

S.No	Area of mosquito breeding	Slum				Non slum			
		Yes	%	No	%	Yes	%	No	%
1.	Flower vases.	7	14%	43	86%	30	60%	20	40%
2.	Air conditioner tray.	2	4%	48	96%	8	36%	42	84%
3.	Opened water storage pots, tank.	46	92%	4	8%	30	60%	20	40%
4.	Hanging clothes.	38	76%	12	24%	17	34%	33	66%
5.	Window and door screens.	30	60%	20	40%	16	36%	32	64%
6.	Stagnant water from refrigerator.	3	6%	47	94%	29	58%	24	42%
7.	Stagnant water in cocount shell.	25	50%	25	50%	28	56%	22	44%
8.	Decorative pots.	-	-	50	100%	-	-	50	100%
9.	Roof gutter with water.	-	-	-	-	18	36%	32	64%
10.	Stagnant water in grinding stone.	25	50%	25	50%	21	42%	29	58%
11.	Presence of broken bottels and plastic containers.	18	36%	32	64%	28	56%	22	44%
12.	Grabage without lids.	50	100%	-	-	50	100%	-	-
13.	Bird baths/Bed dishes.	5	10%	45	90%	20	40%	30	60%
14.	Waste plastic covers.	50	100%	-	-	50	100%	-	-
15.	Waste tyres.	2	4%	48	96%	12	24%	38	76%

6.2 Identification of common mosquito breeding places in slum and non slum area:

. Among 50 houses, common mosquito breeding places in slum areas are opened water storage pots, tanks 46 houses (92%), Hanging clothes 38 houses (60%),stagnant water in coconut shell 25 houses (50%) stagnant water in grinding stone 25houses (50%) Garbage without lid 50 houses(100%) and Waste Plastic cover 50houses (100%).

Among 50 houses, common mosquito breeding places in non slum areas are flower vases 30 houses (60%),Opened water storage pots, tank 30 houses (60%),Stagnant water in coconut shell 28 houses (56%) Stagnant water from refrigerator 29 houses (58%) presence of broken bottle and plastic containers 28 houses (56%),Garbage without lid 50 houses (100%) ,Plastic covers 50 houses (100%)

Table 6.3 Description mosquito control measures in slum and non slum areas

S.No	Mosquito control measures	Slum						Non Slum					
		Yes	%	No	%	Not Applicable	%	Yes	%	No	%	Not Applicable	%
1.	Drain the water from flower vases	5	10%	2	4%	43	86%	22	44%	8	16%	20	40%
2.	Clean the air conditioner	-	-	2	4%	48	96%	8	16%	-	-	42	84%
3.	Cover the storage pots, tanks	1	2%	46	92%	3	6%	21	42%	9	18%	20	40%
4.	Remove the hanging clothes	-	-	38	76%	12	24%	5	10%	12	24%	33	66%
5.	Wash the screen	10	20%	20	40%	20	40%	11	22%	5	10%	32	64%
6.	Drain the water from refrigerator	3	6%	-	-	47	94%	23	46%	6	12%	21	42%
7.	Remove the stagnant water from cocount shell	-	-	25	50%	25	50%	-	-	21	42%	29	58%
8.	Change water in decorative ponds	-	-	-	-	-	-	-	-	-	-	--	
9.	Clean the rain gutter	-	-	-	-	-	-	11	22%	7	14%	32	64%
10.	Properly discard the broken bottles and plastic containers	-	-	18	36%	32	64%	-	-	28	56%	22	44%
11.	Remove the trash/garbage	50	100%	-	-	-	-	50	100%	-	-	-	-
12.	Clean the bird baths/pet dishes	2	4%	3	6%	45	90%	10	20%	10	20%	30	60%

13.	Properly discard the plastic covers	-	-	50	100%	-	-	-	-	50	100%	-	-
14.	Discard immediately The waste tyres	2	4%	-	-	48	96%	9	18%	3	6%	38	76%
15.	Use mosquito coil	28	56%	22	44%	-	-	17	39%	33	66%	-	-
16.	Use mosquito lotion	-	-	50	100%	-	-	9	18%	41	82%	-	-
17.	Use mosquito bats	2	4%	48	96%	-	-	3	6%	47	94%	-	-
18.	Use mosquito nets	3	6%	47	94%	-	-	1	2%	49	98%	-	-
19.	Use mosquito liquids	9	18%	41	82%	-	-	9	18%	41	82%	-	-
20.	Use mosquito net around bed	1	2%	49	98%	-	-	1	2%	49	98%	-	-

6.3 Identification of common mosquito control measures adopted in slum and non slum area:

Common mosquito control measures adopted in slum areas are 50 houses (100 %) removed the garbage every day, 28 houses (56%) used mosquito coils.

Common mosquito control measures adopted in non slum areas are 21 houses (42%) coveted the storage the pots, tanks, 23 houses (46%) drained the water from refrigerator, 50 houses (100%) removed the garbage, 17 houses (39%) used mosquito coils.

Section D Table 6.4

Comparison between the mosquito breeding places and mosquito control measures in slum and non slum area

S.No		Area	Mean	SD	't' test	Table value
1.	Breeding places	Slum	5.62	1.96	0.06*	2.02
		Non slum	6.88	8.46		
2.	Control measures	Slum	7.24	1.74	2.72*	2.02
		Non slum	5.88	3.7		

P< 0.05 level *significant

The table 6.4, depicts that the mean score of mosquito breeding places in slum and non slum areas are 5.62 and 6.88 respectively. And the mean score of mosquito control measures in slum and non slum areas are 7.24 and 5.88 respectively.

In slum and non slum areas the 't' test calculated value is 0.06 which is less than the table value 2.02 at 0.05 level this shows that there is no significant difference in mosquito breeding places in slum and non slum areas.

In slum and non slum areas the 't' test calculated value is 2.72 which is greater than the table value 2.02 at 0.05 level this shows that there is significant difference in mosquito control measures in slum and non slum areas.

VII.DISCUSSION:

Among 50 houses, common mosquito breeding places in slum areas are opened water storage pots, tanks 46 houses (92%), Hanging clothes 38 houses (60%),stagnant water in coconut shell 25 houses (50%), stagnant water in grinding stone 25houses (50%), Garbage without lid 50 houses (100%), and waste Plastic cover 50houses (100%).Among 50 houses, common mosquito breeding places in non slum areas are flower vases with water 30 houses (60%),Opened water storage pots, tank 30 houses (60%),Stagnant water in coconut shell 28 houses (56%), stagnant water from refrigerator 29 houses (58%), presence of broken bottle and plastic containers 28 houses (56%),Garbage without lid 50 houses (100%), waste Plastic covers 50 houses (100%).Common mosquito control measures adopted in slum areas are 50 houses (100 %) removed the garbage every day, 28 houses (56%) used mosquito coils.Common mosquito control measures adopted in non slum areas are 21 houses (42%) coveted the storage the pots, tanks, 23 houses (46%) drained the water from refrigerator, 50 houses (100%) removed the garbage, 17 houses (39%) used mosquito coils.The calculated 't' test value 0.06 is less than table value 2.02 at P< 0.05 level .This shows the there is no significant difference in mosquito breeding places in slum and non slum areas. The calculated value 't' test 2.72 is greater than table value 2.02 at P< 0.05 level. This shows there is significant difference in mosquito control measures adopted in slum and non slum areas.

VIII.Nursing implication:

The implication drawn from the present study are of vital concern to all health care team members including nurse practitioners, nursing educators, nurse researchers and need to be incorporated in the theory and practice.

Nursing education:

As a nurse educator, there are abundant opportunities for nursing professional to educate the slum and non slum area people regarding prevention and control measures of mosquito breeding places.

The study emphasizes of short term service education programmes for nurses and peripheral health workers related to health education on prevention of mosquito breeding places and mosquito control measures.

Nursing Service:

The community health nurses working in the health services should update their knowledge on factors leading to mosquito breeding places and its prevention.

Nursing research:

The study provides an evidence of mosquito breeding places and control measures adopted in households by the people. It motivates the nurse researcher to conduct and experimental studies on identification of mosquito larvae's there by reducing the prevalence of mosquito borne diseases.

XI.Recommendation:

- Experimental study can be conducted to identify mosquito larva in households.
- Experimental study can be conducted to assess the effectiveness of mosquito control measures.

X.Conclusion:

It is found that mosquito breeding places were identified both in slum and non slum areas, the result showed that they only differ in the breeding sites in both the areas. The mosquito control adopted in slum and non slum areas are not adequate to destroy the breeding areas of mosquitoes. Awareness programmes need to be planned to reduce the incidence of mosquito brone diseases.

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