

PRACTICES AGAINST MOSQUITO-BORNE DISEASE TRANSMISSION IN PORT HARCOURT METROPOLIS

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Abstract

This study investigated practices against mosquito-borne disease transmission in Port Harcourt metropolis. Four research questions and three hypotheses guided the study. The study adopted the descriptive survey research design. 300 hundred residents participated in the study. The instrument for data collection was the questionnaire, designed by the researcher titled; practices against mosquito-borne diseases. The instrument was validated by three professionals in environmental, public health and statistics in the ministry of health. The reliability of the instrument was determined using the Cronbach Alpha which gave a reliability coefficient of 0.78. The findings of the study revealed that practices against mosquito-borne disease were favourable. And control of mosquito-borne diseases was perceived to be a collective responsibility of government and home owners. There was a significant relationship between educational level and practices towards mosquito-borne diseases transmission while there was no significant relationship between gender, age and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis. It was recommended among others that the mass media should be used by health educators as a means of disseminating functional information on practices regarding mosquito-borne diseases transmission.

Keywords: Practices, Mosquito-Borne Diseases, Port Harcourt Metropolis

Introduction

Though several measures for their prevention and control are followed, yet the density of the problem is too high with 300-500 million cases and 1.1 to 2.7 million deaths due to malaria alone (one of the MBDs) globally per year (World Health Organization (WHO), 2010). WHO in 2014 reported that every year about one billion people are affected and about one million people die from MBDs. According to www.oxitec.com/mosquitobornedisease 2016, hundreds of millions of people experience pain and suffering from illnesses transmitted by mosquitoes worldwide such as malaria, lymphatic filariasis, dengue, zika among others.

Among people who understand that mosquito bites transmit illnesses, there is a hesitation to follow suggested guidelines to protect against mosquitoes. Bed-nets can reduce cases of MBDs. In Nigeria, it is widely believed that mosquito nets are the best way to prevent transmission. Onwujekwe (2000) in his study of five community, identified that majority of individuals responded that the perceived risk of contracting malaria is high and consider it a serious illness; however, the number of respondents claiming to have bought mosquito net in

the past was very low, illustrating the discomfort between knowledge and practice. Reasons cited for not following suggestions include cost, fear of suffocation, inability to care for them properly and feeling uncomfortable under them in the night.

In Iran and South Africa, house spraying is the only form of government intervention in control of mosquito (Zain, 1997; Goodman, Mnzava, Dlamini, Sharp, Mthembu & Gumede, 2001). And has proven to reduce about 18% of MBD in South Africa (Goodman et al, 2001). Many people in Iran do not allow spraying their living rooms and bedrooms, even if they allow spraying of their houses at all, because they do not like the fumes.

Due to the worries associated with bed-nets and house spraying, people have developed their own remedies to prevent mosquito bites, such as sleeping under fans or air conditioner in hopes that the mosquito will be unable to fly towards them. Community members in Ghana reported that they do not believe that mosquito cause diseases because they have tried to control mosquito and nevertheless people still fall ill of mosquito related diseases. This has led to the belief that they cannot prevent the diseases transmitted by mosquitoes or control mosquitoes because previous attempts failed (Ahorlu, Dunyo, Koran, Nkrumah, Aagaard-Hansen & Simonsen, 1999). This is similar to some rural areas and with this feeling have failed to partake in public health programmes in their areas.

In another study by Tijani (2017) on malaria prevention practices among pregnant mothers in Osogbo, Nigeria using a descriptive cross-sectional survey comprising of 294 pregnant women selected randomly. Data was collected using a structured questionnaire and were analyzed using SPSS 17. The following result were obtained: 87.8% had adequate knowledge about malaria and pregnancy and 75.5% of them were knowledgeable about various available measures in malaria prevention. However, only 34.4% used insecticide treated nets and 21.4% used intermittent preventive therapy. The findings also revealed that 12.8% of respondents practiced clearing of surrounding bushes, 15.4% maintenance of drainages and 15.4% metting of windows and doors. The findings also revealed that various barriers to the use of ITNs were deficient know-how (45.9%), spousal disapproval 36.7%, socio-cultural misconceptions about sleeping under ITNs 18.8% and unaffordability of ITNs 45.5%. There was no significant relationship between the pregnant mother's knowledge and their practice of malaria. However, there were respective significant relationship between the age, parity and educational status and practice of malaria prevention.

Pandit, Patel and Bhavsar (2010) carried out a community based study on awareness and practice about preventive method against mosquito bite in Gujarat. Data were collected using a structured questionnaire from 311 families. The study revealed that almost 99% had knowledge about breeding places of mosquito, but poor knowledge about biting time (20%), 71% of participants knew that mosquito bites causes malaria. 39% households were using mosquito net as protection against the bite, but only 10% were using insecticide treated bed-nets and continuous updating of knowledge about various aspects of mosquito bite.

Kohli, Kumar, Meena, Singh and Higle (2015) research on knowledge and preventive practices about mosquito borne disease in Delhi. Using a sample size of 350 which was arrived at by adopting the systematic sampling technique with a semi-structured questionnaire. Using chi-square and Fisher exact test they arrived at the following results: 142 (67.6%) subjects in rural and 89 (63.6%) in the urban area were able to name at least one mosquito borne disease. 28.1% from rural and 18.6% from urban areas were aware of fever with chills and rigor as a

symptom of malaria. Television was most common source of information in both rural and urban areas. Desert coolers were reported to be cleared regularly in a week in 86.4% houses in rural area, and 88.4% houses in the urban area. Potential breeding sites were significantly more in urban (n=34, 24.3%) than rural (n=13, 6.2%) houses ($p=0.01$). Similarly, actual breeding of mosquitoes was found significantly more in urban houses (n=29, 20.7%) than rural houses (n=14, 6.7%). Knowledge about mosquito borne diseases was significantly associated with education status of the participants. The cross-sectional survey was used for the study.

Mejia, Ribo, Quinteros, Lopez, Villagas, Vela and Membreno (2016) worked on knowledge, attitude and practices related on prevention of mosquito borne diseases and sanitation conditions in Salvadoran urban community. Using a cross-sectional survey design with a sample of 110 households, using a questionnaire and oral interview data was collected, and was analysed using Mann Whitney and Kruskal-Wallis. The result revealed that, the respondents showed high acceptable knowledge (76-8%) high favourable attitude (92.1%) and an acceptable implementation of practices to prevent mosquito bites (38.8). The findings revealed high acceptable knowledge about mosquito borne disease and a high favourable attitude regarding to prevent them, but also revealed a scarce implementation of prevention practices.

Liu, Wan, Cirendun, Cirenneangla, Baipengcuociren, Zhou, Baimaciwang, Guo and Liu (2014) assessed community knowledge and experience of mosquitoes and personal prevention and control practices in Lhasa – using a cross sectional survey on four sub districts of urban Lhasa. They drew a sample of 600 households, using the stratified random sampling method. A questionnaire was used to collect data, which was analysed using percentage ranking, mean and standard deviation and Pearson correlation was adopted to clarify the correlation between the variables. The result shows that a total of 591 respondents participated of which majority were female (61.8%) with a mean score of 46 years. (92%) of respondents have less than primary school education. The average of overall score, knowledge, experience and practice score were 9.23, 4.53, 1.80 and 2.90 respectively. Female subjects with monthly income between 1000 and RMB had higher experience scores. The correlation analysis revealed that significant positive linear correlation existed between knowledge and experience, knowledge and practice, and experience and practice towards mosquitoes.

Mazigo, Obasy, Mauka, Manyiri, Zinga, Kweka, Minyone and Heukelbach (2010) researched on knowledge, attitude and practices about malaria and its control in rural northwest Tanzania – using a cross sectional survey design for the study and a systematic random sampling technique drew a sample of 366 household. A structured questionnaire was used to collect data which were analysed using chi-square statistics. The result of the study are as follows: 56% of respondents associated the disease with mosquito bite, with a significant difference between educational level and knowledge on transmission – knowledge of mosquito breeding areas was also associated with education (illiterate: 22%; literate 59%). Bed-nets were used by 236 (64.5%) and usage was significantly associated with education level. The level of bed-net ownership was 77.3%. most respondents (86.3%) agreed with indoor residual spraying of insecticides. Health facilities were the first option for malaria treatment by 47.3%.

Binsaeed, Sahli, Noureldin, Mohammed, Dafalla, Dahlan, Kasule and Alsheikh (2015) studied knowledge, attitude and preventive practices of dengue fever among secondary school students in Jazan. A cross-sectional study was adopted, multi-stage stratified random sampling

method was used to arrive at a sample of 742 for the study. Data was collected using a pre-structured questionnaire and were analysed using frequencies, percentages and chi-square. The findings illustrate a poor dengue fever knowledge among the secondary school students in Jazan. As to attitude towards dengue fever prevention and control, the majority of the students were having good attitudes and believed that dengue fever could be controlled and prevented (93.2%). Dengue fever control is the responsibility of government and community (83.1%) and they themselves have an important role to play in dengue fever prevention (78.5%). The most common practice to prevent mosquito breeding were found to be the disposing of water from breeding containers (85.5%) and cover of water containers (68.6%). A significant association between the practice of dengue fever preventive and control measures and the gender of the student was found ($P < 0.005$). The top two common sources of dengue fever knowledge were identified as primary health care centres and television (48.1% and 44.5% respectively). Low prevalence of sufficient knowledge was evident among secondary school students in Jazan.

Fuge, Ayanto and Gurmamo (2015) worked on assessment of knowledge, attitude and practice about malaria and insecticide treated nets utilization among pregnant women in Shashogo, Southern Ethiopia. Applying a cross-sectional survey, a total of 398 pregnant women participated in the study and their overall knowledge and attitude towards malaria and insecticide treated nets was fairly good; 74.3% of the mothers had good knowledge and 51.1% of them possessed positive attitude. Nevertheless, only 15.6% of the mothers associated mosquitoes with malaria and majority of them (65.6%) responded that it is transmitted due to poor personal hygiene and environmental sanitation. The insecticide treated nets utilization was poor, as only 15.8% of 398 mothers owned at least one insecticide treated net. This was due to its unavailability in markets and unsustainable distribution. More than half of the mothers who owned the insecticide treated nets did not have a number proportional to their family size, and 52% of the mothers had not slept under bed-net the previous nights. This was due to its being dirty, old, had holes and in some cases lack of awareness on how to install it and its importance to prevent malaria.

In a similar study by Adebayo, Akinyemi and Cadmus (2015), researched on knowledge of malaria prevention among pregnant women and female caregivers of under-five children in rural southwest Nigeria. Using a descriptive cross-sectional survey and multi-stage cluster sampling technique drew a sample size of 631 consisting caregivers of under-five children and pregnant women. A semi-structured questionnaire was used to collect data which were analysed using chi-square statistics. The result of the study are as follows. 84.9% were caregivers of under-five children and 67.7% were married; mean age was 27.7 ± 6.3 years with 53.4% aged between 20 and 29 years. Majority (91.1%) had at least primary school education and 60.2% were traders. Overall 57.7% had poor knowledge of malaria prevention. A good proportion (83.5%) were aware of the use of insecticide treated net for malaria prevention while 30.6% had poor knowledge of its use. Respondents who were young (<30 years), had at least primary education and earn <10,000/per month had significantly poor knowledge of insecticide treated net use in malaria prevention. Majority (60.0%) respondent had poor attitude regarding use of insecticide treated nets.

Statement of the problem

The prevalence of MBDs is quite alarming. According to WHO in (2014) reported that every year about one billion people are affected and about one million people die from MBDs. www.oxitec.com/mosquitobornediseases (2016) has it that hundreds of million people experience pain and suffering from illnesses transmitted by mosquito worldwide. When individuals are infected, the after effect on the persons economic and finances are adverse.

Huge amount of money is spent on the treatment of MBDs. In Nigeria, according to National malaria control programme, the financial loss due to malaria alone (one of the mosquito-borne disease) annually is estimated to be about 132 billion naira. These diseases account for children, pregnant women and the non-immune mortality and morbidity and manpower reduction in our societies.

These skyrocketing incidence and prevalence rate is as a result of individuals bad practices towards MBDs. Researchers such as, Boratne, Jayanthi, Datta, Singh, Senthilvel and Joice (2010); Kidane, Tomass and Dejene (2013); Butterworth (2009) and others in India, Jamaica and the United States of America have tried to assess the knowledge, perception and practices towards MBDs. Amidst the dearth of researches and literature in other parts of the world, the only literature from the southern part of Nigeria is by Nzeako et al (2016) that concentrated on awareness of malaria and lymphatic filariasis in Rivers State.

This study investigated the correlation between specific demographic variables on practices against MBDs transmission in Port Harcourt metropolis.

Purpose of the study

The purpose of this study was to investigate the practices against mosquito-borne disease transmission in Port Harcourt metropolis.

Research Questions

The following research questions were answered to achieve the objectives of this study:

1. What are the practices adopted by residents of Port Harcourt metropolis against mosquito-borne disease transmission?
2. What is the relationship between gender and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis?
3. What is the relationship between age and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis?
4. What is the relationship between level of education and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis?

Research Hypothesis

The following null hypothesis will be tested at 0.5 alpha level of significance to guide the study.

1. There is no significant relationship between gender and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis.
2. There is no significant relationship between age and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis.
3. There is no significant relationship between level of education and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis.

Research Design

The design for this study is a descriptive survey design.

Population for the study

The population for the study consisted of all residents in Port Harcourt metropolis. The Port Harcourt urban area has an estimated population of 1,865,000 inhabitants, up from 1,382,592 as of 2006 census (census, 2006).

Sample and sampling technique

A sample size 300 residents were adopted within the age of 18 years and above in Port Harcourt metropolis. This number was arrived at by employing the simple random sampling technique which offers all member of the population equal and non-zero chances of being selected. Stratified sampling technique was used to select six (6) areas in the area of study. Rumuolumeni, Diobu, Rumuola, D-line, Trans-Amadi and Rumuokoro.

Research Instrument

The instrument for data collection was the questionnaire designed by the researcher tagged knowledge, perception and practices against mosquito-borne disease transmission in Port Harcourt metropolis.

Validity of the instrument

The questionnaire was validated by my supervisor and two (2) other experts in environmental and public health in the ministry of health.

Reliability of the instrument

The test re-test method was adopted to test the consistency of the instrument. The questionnaire was self-administered to twenty (20) residents in Ndele which fall outside the adopted sample size but share similar features with the population of the study. The same questionnaire was re-administered after two weeks interval on the same respondents. The two results obtained were correlated by using Pearson Product Moment Correlation and a reliability coefficient of 0.78 was attained

Procedure for data analysis

Data was analyzed using frequencies, simple percentages, Chi-square and T-test.

Results

Table 1: Practices against mosquito-borne disease transmission

Items	Always F(%)	Never F(%)	Sometimes F(%)	Total F(%)
How often respondents drain stagnant water in their surrounding	135(53.4)	25(9.9)	93(36.7)	253
Draining stagnant water does not reduce mosquitoes	105(41.8)	49(19.5)	97(38.6)	251
How often respondents close their windows and doors in the evening to avoid mosquito bites	215(83.0)	13(5.0)	31(12.0)	259
Always use fans, air conditioner to keep away mosquitoes at night	98(37.8)	33(12.7)	128(49.4)	259
How often respondents use insect repellent in their home	110(42.6)	54(20.9)	94(36.4)	258
how often respondents use bed nets to avoid mosquito bites at night	165(65.2)	24(9.5)	64(25.3)	253

Non responses excluded.

Table 1 revealed the practices against mosquito-borne disease transmission. The highest proportion in each of the items showed that 135(53.4%) indicated that they always drain stagnant water in their surrounding; 105(41.8%) indicated that always draining stagnant water does not reduce mosquitoes; 215(83.0%) always close their windows and doors in the evening to avoid mosquito bites; 128(49.4%) sometimes use fans, air conditioner to keep away mosquitoes at night; 110(42.6%) always use insect repellent in their home ; while 165(65.2%) always use bed nets to avoid mosquito bites at night.

Table 2: Frequency distribution showing the Reasons for never using insect repellent at home

Items	Frequency (f)	Percentage (%)
It causes sickness	31	32.0
It makes children sick	24	24.7
It is harmful to the environment	42	43.3
Total	97	100

Non responses excluded.

Table 2 revealed the reasons for never using insect repellent at home. The reasons indicated by the respondents were that: it is harmful to the environment 42(43.3%), it causes sickness 31(32.0%) and it makes children sick 24(24.7%).

Table 3: Frequency distribution showing who should be responsible for Control mosquitoes around homes

Items	Frequency (f)	Percentage (%)
Government	42	16.2
Home owners	89	34.4
Both	128	49.4
Total	259	100

Non responses excluded.

Table 3 showed that 128(49.4%) of the respondents indicated that both the government and home owners should be responsible for the control of mosquitoes around home, 89(34.4%) indicated that the home owners should be responsible while 42(16.2%) indicated that the government should be responsible for the control of mosquitoes around homes.

Hypothesis 1

There is no significant relationship between gender and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis. To test this hypothesis, the Chi-squared test at 0.05 alpha level was used as shown in the table below.

Table 4: Chi-squared test showing relationship between gender and practices against mosquito-borne disease transmission

Age	Practice		Total	df	X ² -value	P-values	Decision
	Yes	No					
Male	93	13	106	2	6.485	0.039	Rejected
Female	122	31	153				
Total	215	44	259				

***Significant**

Table 4 showed that the X^2 -value of 6.485 at 0.05 significant level is greater than the P-value (0.039). Hence, the hypothesis that states that there is no significant relationship between gender and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis is rejected. This implies that there is a significant relationship between the two variables.

Hypothesis 2

There is no significant relationship between age and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis. To test this hypothesis, the Independent Samples T-test was employed as shown in the table below.

Table 5: T-test Summary of relationship between age and practices against mosquito-borne disease transmission

Group	N	Mean	SD	Df	t-cal	t-tab	Decision
Practice	170	25.606	6.147				
Do not practice	31	27.000	3.847	199	1.218	1.667	Accepted

***Not significant.**

Table 5 shows that t-calculated is 1.218 and t-tabulated is 1.667. Therefore t-cal (1.218) is lesser than t-tab (1.667) at 0.05 level of significance. The null hypothesis is therefore accepted. This shows that, there is no significant relationship between age and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis.

Hypothesis 3

There is no significant relationship between educational level and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis. To test this hypothesis, the Independent Samples T-test was employed as shown in the table below.

Table 6: T-test Summary of relationship between educational level and practices against mosquito-borne disease transmission

Group	N	Mean	SD	Df	t-cal	t-tab	Decision
Practice	215	3.501	1.226	244	0.179	0.008	Rejected
Do not practice	31	3.807	0.402				

***Significant.**

Table 6 shows that t-calculated is 0.179 and t-tabulated is 0.008. Therefore t-cal (0.179) is greater than t-tab (0.008) at 0.05 level of significance. The null hypothesis is therefore rejected. This shows that, there is a significant relationship between educational level and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis.

Discussions

The finding of this study on this showed that about 53.4% of respondent always drain stagnant water in their surroundings. This implies that residents practice is high in source reduction of mosquito breeding site. This is in agreement with the findings of Binsaeed et al (2015) which report the disposing of water from breeding sites. Also, in agreement is the

finding of Kohli et al (2015) which reported 86.4% regular stagnant water cleaning, also, in consonance with that of Ukpong et al (2007) which reported 16.8% elimination of breeding sites as a way of source reduction. The findings also revealed that 83.0% always close their windows and doors in the evening to avoid mosquito bites. This is in keeping with Ukpong et al (2007) which reported netting of windows and doors to avoid mosquito bites at night. Also, in agreement with this study is that of Potter et al (2016) which reported windows and door screen as a way of preventing mosquito bites. The findings also showed that 49.4% sometimes use fans, air conditioners to keep away mosquitoes at night. This is in agreement with the findings of Jaeger et al (2016) which report 2/3 two third of participants fan use in driving away mosquitoes. And also in line with the assumption Panker Pope (2010) which assert that, putting on of fan is a solution to drive away mosquitoes chemical-free. This finding is in contrast with the findings of Msughter et al (2017) which reported 98.7% not effective in driving away mosquitoes, therefore, does not use fan. The finding also revealed that 42.6% always use insect repellent at night and 65.2% always use bednets to avoid mosquito bites at night. This similar to the findings of Pandit et al (2010) which report 39% use of net to protect against mosquito bites. The findings are also in keeping with that of Mazigo et al (2010) which reported 64.5% usage of bed-net and 86.3% insecticide use. Also, in consonance with the study is the finding of Jaeger et al (2016) which report 100% use of bed-nets. Reasons for not using insect repellent in homes in the study (table 2) are in agreement with that of Butterworth (2010). Table 3 showed responsibility for control of mosquitoes around. The findings of the study are in agreement with Binsaead et al (2015): Makherjee et al (2015) and Butterworth (2010).

The findings showed that gender has a significant influence on practices, against mosquito-borne disease transmission in Port Harcourt metropolis. The findings are in line with findings of Msugh-ter et al (2017) which reported a significant different between male and female as regards to practices against mosquito-borne diseases. The findings also corroborates that of Liu et al (2014) which reported that females had a better practice score as in agreement with the findings is studies by Binsaead et al (2015) which reported that female gender had a significant association between the practice of dengue fever preventive and control measures. The similarity in previous finding and this study maybe due to the fact that universally women carryout more domestic work than male and as such have better practices towards mosquito bit prevention than male.

The findings indicate that individuals at all ages prevent themselves from mosquito bites. This shows that both young and old adopt a means of protecting themselves from mosquitoes. The findings are in line with that of Acharya et al (2017) reported that age does not significantly influence practices towards mosquito-borne disease transmission. However, at variance with the findings is studies of Msughter et al (2017) which reported that those at a younger older age group had a better practice than older people. Tijan (2017) also reported that age had a relationship practices against mosquito borne disease transmission. The findings also disagree with that of Adebayo et al (2015) which recorded that younger people had a poor practice towards malaria prevention. The difference in various studies could be that the samples used for the studies differ in age and the location of studies. Also, environmental sanitation practices carried out in different places may influence age and practice.

The findings of the study are in keeping with that of Tijani (2017) which recorded a significant relationship between educational status and practice of malaria prevention. The

finding were also supported by that of Kohli et al (2015) which indicated that preventive practices about mosquito borne disease was significantly associated with education of participants. The findings are also in line with that of Mazigo et al (2010) which recorded that bedwets usage was significantly associated with educational level. Also, in agreement is findings of Adebayo et al (2015) which recorded that lowered educational level determines lower practice.

Conclusion

Conclusively, the analysis carried out in the present study yield a clear snapshot of the status of mosquito-borne disease prevention practice in Port Harcourt Metropolis. The finding revealed that practices against mosquito-borne disease were favourable. And control of mosquito-borne diseases was concluded by respondents to be a collective responsibility of government and home owners. Furthermore, there was no significant relationship between gender, age and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis while educational there is a significant relationship between educational level and practices against mosquito-borne disease transmission among residence in Port Harcourt Metropolis.

Recommendations

In view of the findings, the following recommendations are made:

1. The mass media should be used by health educators as a means of disseminating functional information on practices regarding mosquito-borne diseases transmission
2. Non-governmental organizations should carry out more research works on mosquitoes so as to make information readily available to access.
3. The ministry of environment should lay more emphasis on the monthly sanitation programme by health educating the public on its importance in controlling mosquitoes.
4. The ministry of health should distribute more insecticide treated nets to rural areas and orient the on how to use it in the prevention of mosquito bites.

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