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PREVALENCE OF MALARIA AND ASSOCIATED RISK FACTORS AMONG THE ELDERLY IN NIGERIA: IMPLICATION FOR POLICY INTERVENTION

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ABSTRACT: Malaria is a widespread public health issue that affects not just children under five and pregnant women but also the elderly, who are also susceptible to malaria infection like other age cohorts. This study specifically examines malaria prevalence and associated risk factors among Nigeria's older population and its implications for policy intervention. It adopted secondary data from the 2015 Nigerian Malaria Indicator Survey report. A total of 1778 elderly persons were considered in the study. Analyses were carried out at different levels. At the bivariate level, the chi-square test was carried out to explore the factors that were associated with malaria incidence. At the same time, the multivariate logistic regression considers the impact of each of the variables on malaria incidence while adjusting for other variables. The test was conducted at a 5 percent level of significance, and the results were presented using the adjusted odds ratio (AOR), 95% confidence interval (CI), and p-values. Findings revealed a high prevalence case of malaria among the elderly, with the rural areas having the highest incidence cases. All reported ages (≥ 60 years) showed a high prevalence level, while there was slight variance by age group among the different age intervals of the elderly. The study concludes that the high malaria prevalence rate in the study area is influenced by factors such as education, age, and place of residence. To combat malaria effectively, prevention and control programmes should be extensive and all-encompassing across all ages, especially the elderly.

Keywords: Malaria, Prevalence, Elderly, Disease, Socio-demographic, Intervention

BACKGROUND TO THE STUDY

Globally, malaria remains a significant public health challenge, and it is transmitted by female Anopheles mosquitoes. The symptoms include flu-like illness, fever, common cold, headache, and loss of appetite, among others. Although the disease is preventable and curable, it remains the leading cause of death and ill health in the most tropical regions of the world, with about 241 million malaria cases and 627,000 mortalities reported globally in 2022 (Ahuru & Ighodaro, 2022). This human micro-parasitic infection has resulted in enormous economic costs associated with morbidity, endangering the health and development of people of all ages worldwide (New York Academy of Science, 2013; World Health Organisation, 2022). Despite the declaration of malaria as a global health challenge and efforts at control, such as prompt diagnosis and treatment, long-lasting insecticide nets, and indoor residual spraying, the disease has remained unabated and highly endemic (Tairou et al., 2022). It has continued to spread rapidly among millions of people in rural and urban communities in tropical countries of Africa (Sayantani, Ram & Somdatta, 2011).

The trends in sub-Saharan Africa are alarming and remain unacceptably high. For instance, the region accounted for a 3.5% increase in the case number of people infected with malaria between 2016 and 2019 (World Malaria Report, 2020). The disease carries a massive burden of the global prevalence cases and has continued to plague the region. In 2002, about 602,000 mortality cases were reported in sub-Saharan Africa, making it the primary factor responsible for ill-health and mortality in the area. Several malaria-endemic countries in the area like Nigeria, have faced devastating consequences over the years due to the enormous burden of the cases (WHO, 2022).

Nigeria accounts for about 51 million infection cases and 207,000 deaths across all age categories. Although, all age groups are immunologically susceptible to this infectious disease, however, the elderly (those who are ≥ 60years, WHO, 2021; Idris, et al., 2022) suffer momentously from it due to neglect and lack of adequate attention like other age cohorts; hence, the rise in outpatient clinical cases among the elderly in Nigeria (Dawaki, et al., 2016). Elderly people because of their weak immune system that arises from reduced production of T cells and B cells are susceptible to ill health when exposed to certain factors (Keilich, Bartley & Haynes, 2019). For example, different studies have attempted to identify the risk factors at the individual level and household levels such as availability of health facilities, socioeconomic status, occupation, residential mobility, presence of domestic animals near homesteads, and use of preventive methods in under-five children and pregnant women (Fayehun & Salami, 2014; Habyarimana & Ramroop, 2020) across some geographical settings in Nigeria. Knowledge of how these factors interact to expose the elderly to malaria infections needs to be investigated systematically in the entire country.

Although malaria is preventable and treatable, several associated risk factors and the huge overlooked of malaria infection cases among the elderly have made the disease remain on the rise among this age cohort. This compounds the problem of malaria infection, which is a severe public health issue that is very disturbing in developing countries, particularly in Nigeria, with one of the highest cases recorded so far. The menace has attracted a lot of interest and much attention over the years but the problem remains unresolved. Findings from previous research revealed that several factors may impact a person's immunity as a result of exposure to carrier agents such as mosquitoes (Mensah, et al., 2021). This is a pointer to the fact that older adults or aged are at increased risk of frequent clinical appearance as a result of ill-health associated with morbidity and given rise to the underlying ailment (Khan, et al., 2022; Chukwuocha, et al., 2016; Arokiasamy, et al., 2015).

Empirical evidence suggests that numerous researches have been carried out on malaria and associated risk factors among different age groups in Nigeria. Most of the studies reviewed focused on expectant mothers, their babies yet unborn, and younger children below 5 years old. There are no adequate data available on the prevalence and management of malaria among Nigerians over the age of 60, sadly this group jointly accounts for the total prevalence cases in the country (WHO, 2022); yet this age group is susceptible to ill-health that arises from the weakened immune system as a result of a reduction in the level of T cells due to old age. This creates a paucity of knowledge on malaria and health-related discussions among the elderly in Nigeria. The study is therefore poised to fill this missing gap in knowledge by evaluating the prevalence and predisposing factors associated with malaria transmission among the elderly in Nigeria.

Aim and Objective

The study generally assesses the prevalence level and the predisposing factors of malaria among the elderly in Nigeria. Other specific objectives include:

a. examine the predisposing risk factors of malaria prevalence among the elderly in Nigeria.
b. assess the relationship between socio-demographic factors and prevalence level of malaria among the elderly in Nigeria.

Research questions

a. What are the predisposing risk factors of malaria among the elderly in Nigeria?
b. What is the relationship between socio-demographic factors and prevalence level of malaria among the elderly in the study area?

BRIEF LITERATURE REVIEW

Malaria, without a doubt, is among the global deadly diseases which affect the health and well-being of persons living in tropical and subtropical regions of the world. The effect has seriously impaired human capital, social, economic, and other development factors (Ukpong, Etim, Ogban, & Abua, 2015). The disease is the outcome of protozoan parasites of the genus Plasmodium. This parasite produces most malaria infection cases in Sub-Saharan Africa (Adebayo, Akinyemi & Cadmus, 2015; Pam et al., 2015). According to Idowu, Okoronkwo, and Adagunodo (2009), there are four different species of Plasmodium parasite. Each of the species exhibits relative variation in its symptoms in infected individuals. Plasmodium falciparum is one of the predominant parasites that are responsible for illness among millions of persons in Africa, South East Asia, and South America (Idowu, Okoronkwo & Adagunodo, 2009). It is a deadly parasite that leads to most deaths, particularly among elderly people. Infection with Plasmodium falciparum is characterized by joint pains, fatigue, abdominal pains, muscular pains, dizziness, fever, and vomiting. A person infected with the disease needs immediate treatment to avoid the effects of the parasite and failure for quick intervention may affect the smooth functioning of the central nervous system. Besides convulsions, paralysis may also result from this.

The mosquito called Anopheles is responsible for distributing infectious diseases through its saliva. The sporozoites move through the blood vessel to dwell in the liver for easy reproduction. The bloodstream serves as a fertile ground for multiple attacks on the body system as merozoites. As such, the red blood cells become so incapable to resist their attack against the body system (Sato, 2021). Between 24 to 72 hours, when the parasites have entirely dominated the human blood, the infected person begins to manifest symptoms of infection. The vector affects all ages, especially the elderly.

The world population is growing rapidly and the population of the elderly is on the increase as well (Imudia & Ukponahiusi, 2023). In Nigeria, the elderly population forms a significant proportion of her total population. About 5% of the over 200 million people in Nigeria are over 60. This figure is expected to rise to almost 25.3 million by 2050, making the older population a prominent group in Nigeria (Akintayo-Usman & Usman, 2021; Imudia & Ukponahisui, 2023). This continuous growth of the world's ageing population provides unprecedented concerns in healthcare (Beard et al., 2016; Imudia & Ukponahisui, 2023). These concerns

according to Beard et al., 2016), include long-term care expenditures, labour-force shortages, shifting disease burdens, higher health, and dissaving, and accompanying decline in income at old age. Besides, physical capacities gradually deteriorate with age, the immune system deteriorates, and a person's vulnerability to illnesses increases because of weak immune systems brought on by aging.

According to Siko et al. (2024), malaria infection is a function of different variables. It involves complex interactions that largely depend on the vector, physical, socio-economic, demographic, and environmental factors, as well as behaviour promoting anaemic outcomes. These variables are active risk factors that predispose people, especially the elderly, to high susceptibility to malaria infection. However, most of the studies reviewed on malaria prevalence among the elderly were region-based, with a number of them using primary data from clinical outpatients' cases in the area. The rate of progression of the elderly population, as well as their susceptibility, demands much attention; however, the literature reviewed showed a paucity of data on malaria prevalence and associated risk factors in the Nigerian older population.

Research design

The study adopted a cross-sectional research survey design. It is purely quantitative research and thus it adopted quantitative research methodology in data analysis and interpretation while secondary data were generated from the 2015 Nigerian Demographic and Health Survey. The sample size constitutes the elderly (60 years and above) drawn from a cluster of six geopolitical zones (NE, NC, NW, SE, SS, SW) of the Nigerian malaria indicator survey in 2015. A total of 1778 elderly persons were considered. The survey was conducted in 2015 in the six geopolitical zones of Nigeria. This study specifically examines the predisposing factors of malaria prevalence among the elderly in Nigeria.

Data Source

The data analysed in this study was obtained from the 2015 Nigeria Malaria Indicator (MIS) survey 2015. The survey is the second MIS conducted in Nigeria that provided information on Malaria prevalence and preventive practices such as sleeping under insecticide-treated nets and use of indoor residual sprays for the six geopolitical zones with a representative sample size of 3,166. It covers a total of 333 clusters across the country (138 clusters in urban and 195 clusters in rural areas). The response rate for the survey was 98.8 percent for all ages. The survey was funded by United States Agency for International Development (USAID) with support from diverse institutions. Approval to use the MIS 2015 data set was received from MEASURE DHS, which is the institution in charge of the data set. Given that the study focused on older people, the analysis was restricted to 60 years and above. Those aged 60 were used as the cut-off point in line with Fayehun and Salim (2014) and the World Health Organization (2013; 2021).

Statistical Analysis

The data was analysed using SPSS version 20.0. The analyses were carried out at three levels. They are descriptive, bivariate, and multivariate analyses. In descriptive studies, the characteristics of the respondents are presented using simple proportion and frequency. At the bivariate level, the chi-square test was carried out to explore the factors that were associated with malaria incidence. The test was conducted at 20% for the binary logistic regression while

5% was for the multivariate analysis. However, the Chi-square tests only examined one of the variables at a time, without adjusting for the other variables. At the multivariate level, binary logistic regression was used to explore the determinants of malaria incidence. The multivariate logistic regression considers the impact of each variable on malaria incidence while adjusting for other variables. The test was conducted at a 5 percent level of significance and the results were presented using the adjusted odds ratio, 95 percent confidence interval (CI), and probability values.

Variables and their Measurements

The dependent variable for this study is malaria incidence. In the survey, a blood smear test was conducted to examine the respondents that had malaria. The malaria test used was a rapid diagnostic test using a blood smear. It is the rapid diagnostic test that tells us if a person currently has malaria or not. Those that have blood samples that tested positive for malaria were coded 1, while others coded 0. Malaria incidence as a binary variable was regressed on various socio-demographic variables, and they include age (60-69/70-79/≥ 80); education attainment (non-formal/primary/secondary/higher); place of residence (rural/urban), region of residence (South-South/South-West/South-East/Noth-Central/North-East/North-West), household wealth quintile(poorest/poorer/average/wealthy/wealthiest), use of indoor residual spray (Yes/No) and sleeping under Insecticide Treated Nets (ITNs).

RESULTS

In this section, the results generated from the secondary data are presented. Data in Table 1 represents the socio-demographic characteristics of respondents in the study area. The results indicate that a larger proportion of the total respondents representing 53% were between 60-69years old. While the least represented among the age categories were those who were 80 years and above, representing 17.8% of the total respondents. The results also indicate that a more significant proportion of the respondents, representing two-thirds of the total respondents, reside in rural areas, while 39.8% of the respondents reside in urban centres. The results on the wealth index quintile indicate that one-third of the population is from the poor wealth quintile while 27.7% were from the richer wealth quintile group. Results in Table 1 also indicate that a larger proportion of respondents, representing 12.7% of the total respondents, had post-secondary education compared to those who had no post-secondary education, representing 87.3%. That is, 64% of the total respondents had malaria while 36% of the respondents had no malaria.

Table 1: Socio-demographic profile of respondents (aged 60years ≥) covered in the survey

Variables	N (1778)	%
Age of respondents:		
60-69years	957	53.8
70-79years	504	28.3
≥80years	317	17.8
Region:		
North-Central	411	23.1
North-East	193	10.9
North-West	203	11.4
South-East	173	9.7
South-South	324	18.2

South-West	474	26.7
Residence:		
Urban	707	39.8
Rural	1071	60.2
Highest Level of Education:		
No formal education	527	29.6
Primary	312	17.5
Secondary	713	40.1
Higher	226	12.7
Wealth index:		
Poorer	144	8.1
Poor	251	14.1
Rich	362	20.4
Richer	493	27.7
Richest	528	29.7
Prevalence:		
No	640	36.0
Yes	1138	64.0

Source: Author, 2022

Bivariate Analysis

The chi-square results at a 0.2 significant level showed that sleeping under insecticide-treated nets, age, education, region, wealth, and residence are associated with malaria incidence in the study area. The results indicate that the proportion of those infected with malaria incidence decreases with age. For instance, 31.4% of those aged 60-69 years had malaria, 19.6% of respondents aged 70-79years, while 17.8% of those aged ≥80years had malaria. South West respondents had malaria compared to other regions. For instance, 21% of respondents in South West had malaria, 17% of respondents in North-Central, 10.5% in North-East, 9.6% in the North-West, 4.7% in South East, while less than 2% in South-South had malaria.

According to the results, while 35.9% of those in rural areas were reported to have had malaria, 28.1% of those in urban part of the country had malaria. Data in Table 2 also show that the proportion of those infected with malaria incidence decreases with the level of educational attainment. For instance, 10.6% of those who had malaria were primary school certificate holders while 9.1% of the respondents who had post-secondary education had malaria. The results further report that a higher proportion of respondents who did not slept under insecticide-treated nets had malaria compared to those who sleep under insecticide treated net. For instance, a higher proportion of those who did not sleep under insecticide-treated nets had malaria when compared with those who slept under insecticide-treated nets (64.3 percent vs 35.7 percent). The data further revealed that a higher proportion of respondents (82.5%) who do not use mosquito insecticide had malaria than respondents (17.5%) who used mosquito insecticide.

Table 2: Chi-square test of factors associated with Malaria incidence

Variables	No (640)	Yes (1138)	Alpha level 0.2 χ2/ P-value
Age of respondents:			
60-69years	399 (22.4%)	558 (31.4%)	$\chi2 = 104.490^a$
70-79years	155 (8.7%)	349 (19.6%)	P = 0.000
80-89years	66 (4.8%)	229 (13%)	Df = 2
Region:			
North Central	108 (6.1%	303 (17.0%)	
North East	7(0.4%)	186 (10.5%)	$\chi2 = 668.330^a$
North West	32 (1.8%)	171 (9.6%)	P = 0.000
South East	89 (5.0%)	84 (4.7%)	Df: 5
South South	303 (17.0%)	21 (1.2%)	
South West	101 (5.7%)	373 (21.0%)	
Residence:			
Urban	207 (11.6%)	500 (28.1%)	$\chi2 = 22.985^a$
Rural	433 (24.4%)	638 (35.9%)	P = 0.000
Highest Level of Education:			
No education			
Primary	149 (8.4%)	378 (21.3%)	$\chi2 = 34.404^a$
Secondary	124 (7.0%)	188 (10.6%)	P = 0.000
Higher	303 (17.0%)	410 (23.1%)	Df: 3
	64 (3.6%)	162 (9.1%)	
Wealth index:			
Poorer	43 (2.4%)	101 (5.7%)	$\chi2 = 9.768^a$
Poor	80 (4.5%)	171 (9.6%)	P = 0. 045
Rich	119 (6.7%	243(13.7%)	df= 4
Richer	190 (10.7%)	303(17.0%)	
Richest	208 (11.7%)	320(18.0%)	
Sleep inside ITN:			$\chi2=6.948^a$
No	451 (70.5%)	732 (64.3%	P =.008
Yes	189 (29.5%)	406 (35.7%)	Df= 1
Use insecticide spray:			15.503[a]
No	478 (74.7%)	(939) 82.5%	DF=1
Yes	162 (25.3%)	199 (17.5%)	P = 0.008

Source: Author, 2022 goodness of fit-test

Multivariate analysis

The adjusted odds ratio, 95% confidence interval, and probability values are presented and discussed in Table 3. The results showed that most indicators such as age, region, educational qualification, residence, use of insecticide spray, and sleeping under treated nets were significantly associated with malaria incidence at a 0.5 significant level. This implies that slight variation in any of these predisposing factors could trigger the prevalence rate of malaria among the study group. In reference to respondents aged 60-69 years, other age respondents were significantly more likely to have malaria. Also, the odds of malaria incidence increase with

age. In reference to those residing in urban areas, those in rural areas (aOR=2.239, P < 0.001) were more likely to have malaria. In reference to those with non-formal education, those who had primary education (aOR=0.402, P <0.003), secondary (aOR=0.324, P < 0.001) and post-secondary education (aOR=0.467, P < 0.005) were less likely to have malaria. In reference to those drawn from the poorest wealth quintile, those who were from poorer (aOR = 1.663; P < 0.1), middle (aOR=1.302, P< 0.1), richer (aOR=1.942, P < 0.05), richest wealth quintiles (aOR=1.795, P = 0.005) were more likely to have malaria. In reference to respondents in North-Central, those in North-East (aOR = 0.444, P < 0.001), North-West (aOR = 9.169, P< 0.001), South-South (aOR = 0.178, P < 0.001) were less likely to have malaria.

Table 3: Estimated Odds Ratio of malaria among the elderly

Variables Categories		Malaria			
		Total cases examined	95% C.I.for EXP(B)	aOR	P-value
Age:	60-69years	957	-	1	<.001*
	70-79years	504	(10.217-197.116)	44.877	<.001*
	> 89years	317	(18.886 - 384.482)	85.214	<.001*
Region	North-Central	411	-	1	<.001*
	North-East	193	(.304- .648)	.444	<.001*
	North-West	203	(3.853-21.818)	9.169	<.001*
	South-East	173	(.571-1.796)	1.013	<.001*
	South-South	324	(.109-.290)	0.178	<.001*
	South West	474	(.006-.019)	0.011	<.001*
Residence	Urban	707	-	1	-
	Rural	1071	(1.599-3.135)	2.239	<.001*
Education:	No education	527	-	1	.005**
	Primary	312	(.220-.735)	0.402	.003**
	Secondary	713	(.187-.563)	0.324	<.001*
	Higher	226	(.292-.747)	0.467	.005**
Wealth index:	Poorest	144	-	1	.017**
	Poorer	251	(.832-3.325)	1.663	.1***
	Middle	362	(.714- 2.373)	1.302	.1***
	Richer	493	(1.208-3.124)	1.942	.05**
	Richest	528	(1.204-2.676)	1.795	.005**
Dirty surrounding	No	1232	-		
	Yes	546	(1.032-1.953)	1.420	.05**
Sleep inside (ITN	No	1183	-		
	Yes	595	(0.314-.599)	0.434	<.001*
Use insecticide	No	1417	-		
Spray	Yes	361	(1.955-3.799)	2.725	<.001*

aOR =Adjusted Odd Ratio, CI= Confidence Interval; P-value=Probability Value

* = Less than 0.001; ** = less than 0.05; ***= less than 1

DISCUSSION

The study evaluates the incidence of malaria and the predisposing risk factors among 1778 old persons in Nigeria who participated in the Malaria Incidence Survey (MIS), in 2015. Data were drawn from six geopolitical zones with variations in the prevalence level across the regions. In the study, we found a high prevalence rate (64%) of malaria among the elderly. This was in tandem with the findings of Kweku et al. (2017), Chukwuocha et al., and Essendi et al. (2019), that reported a high frequency of malaria disease among the geriatric population in South-Eastern Nigeria and Ghana. However, previous studies on malaria had reports varied significantly. For example, a prevalence of 36.1% was reported in Abia (South-eastern Nigeria), and Osun (South-West Nigeria) 16.2%. The difference in the prevalence may be a result of variations in the study populations and location (Noland et al., 2014; Egbewale, Akindele, Dedokun, & Oyekale, 2018).

The high prevalence rate of malaria disease among the elderly is perhaps triggered by their weak immune system that gets compromised from mosquito bites. Furthermore, the elderly people do not consider malaria a serious health challenge but rather see it as a disease that affects only children and pregnant women; hence, the poor attitude towards the control measures among this age group. This poor adherence to malaria control indicators has significantly increased and impacted the vulnerability level of the elderly people to malaria in the study area. Consequently, findings revealed that most of the indicators such as age, region, educational qualification, residence, use of insecticide spray, and sleeping under treated nets were significantly associated with malaria incidence. This implies that slight variations in any of these predisposing risk factors could trigger the prevalence rate of malaria. For instance, the study found that age is associated with the prevalence rate in the study area. This was in collaboration with Rogerson, Chaluluka and Kanjala (2001) and Chukwuocha (2016) that held that the geriatric population, in general, is exposed to malaria infection due to the failure of the vulnerable population to use proven and effective interventions for prevention, control, and treatment method for the vector. This is because the geriatric population in malaria-endemic areas is not seriously considered to be a risk factor and does not use any preventive measures.

The findings also showed that education is significantly associated with high malaria prevalence in the study site. However, the elderly with post-primary education were less likely to be infected with malaria parasites compared to those with no formal education. This implies that those who have no formal education may not see the relevance of using any of the preventive or control measures due to a lack of knowledge or information about the potency of prevention. This increases the chances of malaria infection in the long run among the elderly. Moreover, those who had no formal education were more likely to live in a rural area, thus increasing their risk of incidence of malaria infection as the environment is also a factor that influences the spread of the disease. This was in conjunction with past studies conducted in different regions of Nigeria and other countries **(**Adebayo, Akinyemi & Cadmus, 2015; Essendi, et al., 2019; Habyarimana & Ramroop, 2020; Mensah, et al., 2021; Tairou et al, 2022). The studies established that those who are educated are less likely to be exposed to the negative effects of malaria and ways to control it.

It was further observed that the region in which elderly people reside increases their chances of being infected with malaria infection, although with slight variation in the prevalence rate across the various regions. For example, the study revealed that those in Southeast were less likely to be infested by malaria parasites compared to elderly persons in other regions in the study area. The low percentage in the region could be a result of poor reportability. Perhaps,

the sampled respondents in the region fall within the age cohorts that have high resistance to malaria. Findings also revealed that the majority of the respondents do not use any preventive or control measure for malaria reduction, such as sleeping inside a mosquito net, and do not use insecticide control.

The finding also established some level of rural-urban differentials in malaria-related health behaviour. This is in collaboration with Fayehun and Salami (2014), who established that older people who reside in urban areas have twice the odds of seeking treatment for fever than those in rural areas of Nigeria. Education was also discovered to be significantly associated with malaria prevalence. More significantly, differences were, however, observed among the categories, which further heightened the diverse nature of the epidemic in the study area. From the findings, it was discovered that place of residence was significantly associated with malaria prevalence, with those in rural areas more prone to malaria infection than those in urban centres. This confirms past studies carried out both in Nigeria and elsewhere (see Rogerson, Chaluluka & Kanjala, 2001; Olasehinde, Ojurongbe, Akinjogunla, Egwari & Adeyeba, 2015; Chukwuocha, 2016; Ahuru & Ighodaro, 2019). The higher risk associated with those in rural areas probably arises from the untidy nature of such an environment, which could breed insects. The bushes surrounding the rural areas are near to nature. Most of Nigeria's rural areas have dwellings where mosquitoes may enter easily, increasing the incidence of cases. The findings also revealed a significant relationship between the use of insecticide and malaria incidence in the study. This, perhaps, is because insecticide reduces the risk factor associated with malaria infection. It can reduce the breeding of mosquitoes. The vectors that would have reproduced or carrier vectors are eliminated when insecticide is introduced. This is in collaboration with the World Health Organization (1996), which linked the use of chemicals as the mainstay of insect and pest control. It is an effective form of insect growth regulator.

Conclusion

The study concluded that malaria is a common disease and it continues to be one of the most widely spread health hazards in tropical and subtropical regions with a high prevalence rate among elderly people. It is a public health concern that does not only affect children under five and pregnant women; elderly, people are now even more exposed due to neglect than other age groups that seem to be given considerable attention, unlike the elderly. Age-related physiological changes include lower T and B cell production, making older people susceptible to malaria complications. Consequently, the functional role the elderly would have played in the home and society is hampered due to ill health that should have been preventable. Hence, the elderly as a result of this disease become a burden. To effectively combat malaria, programmes must be all-encompassing and inclusive of people of all ages, especially the aged. Therefore, there is a need for a better sensitization campaign across the nation, particularly in rural areas where the target group's prevalence rate is still high. Furthermore, it is imperative to put formal education as a top priority as this could go a long way toward reducing the susceptibility or risk of infection. In other words, education is essential in preventing and curing patients of malaria because it provides them with a better understanding and awareness of the disease and how to take preventive measures against malaria and seek treatment. It is, therefore, imperative to improve health services as well as increase education about malaria prevention among the elderly.

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