Journal of Community Medicine & Public Health
Tiembre I, et al. J Community Med Public Health 7: 368
www.doi.org/10.29011/2577-2228.100368
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Research Article

Use of Rabies Post-Exposure Prophylaxis in the Population of Dabou, Côte d'Ivoire, 2016

Issaka Tiembré[1,2*], Coulibaly Adama[3], Djipro Y Alida Claire[4], Benie Bi Vroh Joseph[1,2], Dagnan NS[1]

[1]Felix Houphouët Boigny University, Côte d'Ivoire

[2]National Institute of Public Hygiene, Abidjan, Côte d'Ivoire

[3]National Institute of Public Hygiene, Adzopé, Côte d'Ivoire

[4]Medical Doctor, Abidjan, Côte d'Ivoire

[*]**Corresponding author:** Issaka Tiembré, National Institute of Public Hygiene, Abidjan, Côte d'Ivoire

Citation: Tiembré I, Coulibaly A, Djipro YCA, Benie BVJ, Dagnan NS (2023) Use of Rabies Post-Exposure Prophylaxis in the Population of Dabou, Côte d'Ivoire, 2016. J Community Med Public Health 7: 368. DOI: https://doi.org/10.29011/2577-2228.100368

Received Date: 28 August, 2023; **Accepted Date:** 13 September, 2023; **Published Date:** 15 September, 2023

Abstract

Background: Rabies is a potential threat to people living in enzootic areas such as Côte d'Ivoire. Unfortunately, many people at risk often do not seek treatment or are very late in starting treatment. **Objectives:** The aim of this study was to analyse the use of post-exposure prophylaxis among exposed subjects in the town of Dabou. **Method:** This was a descriptive and analytical cross-sectional study conducted over a three-month period in Dabou. Data were collected by interview using a questionnaire. The data were analysed using EPI INFO software version 6.04. Comparisons were made using the Chi^2 test with a threshold of 5%. **Results:** Of the 322 subjects exposed, 67.1% were male with an average age of 20 years. 51% of the victims were from the Wrood and Ancien Dabou neighbourhoods and 53% had secondary education. 61.1% of cases were exposed to bites, 83% of which were caused by dogs, and 13% by PEP. In 42.5% of cases, the exposed subjects had sought medical attention within 48 hours. It should be noted that negligence, ignorance, lack of financial resources and the remoteness of rabies centres are the socio-economic and behavioural factors responsible for the delay in seeking PEP. **Conclusion:** Rabies remains a major public health problem in Côte d'Ivoire, where the main animal species involved is the dog. Rabies control strategies must focus on raising awareness and, more specifically, on the use of PEP.

Keywords: Recourse; Post-exposure prophylaxis; Rabies; Population; Côte d'Ivoire; Dabou

Introduction

Rabies is an anthropozoonosis caused by Lyssaviruses that is accidentally transmitted to humans by biting, scratching or licking skin injured by an animal carrying the rabies virus. According to the WHO, it is a neglected, notifiable disease. It presents as acute encephalomyelitis with a fatal course [1]. Dogs are the animal responsible in the vast majority of cases. Rabies can also be contracted by spraying infectious material onto mucous membranes or by grafting tissue from infected patients [2-4].

According to the WHO, more than 3.3 billion people live in rabies-endemic areas. In 2001, it was estimated that around 55,000 people died each year from rabies, the vast majority of them in Asia and Africa [5-9]. Since 2013, more than 60,000 people have died each year from rabies worldwide, including 20,000 in India and 24,000 in Africa. 84% of those who have died live in rural areas of Africa and Asia. [10,11] Every year, 10 million people undergo treatment following exposure to animals suspected of having rabies. However, it is estimated that this disease would cause 327,000 deaths a year in the absence of post-exposure prophylaxis [12]. With 24,000 deaths a year, Africa is one of the continents most affected by rabies [13]. In Côte d'Ivoire, from January 2005 to December 2009 (in 5 years), seven confirmed cases of

rabies were recorded in the infectious diseases department of the Treichville University Hospital in Abidjan [14]. Côte d'Ivoire, a country in West Africa, has not been spared, with a high rate of risk of transmission to humans, where around 11,000 cases of animal bites are reported each year [15,16], with 30-50% of deaths occurring in children under the age of 15 [17].

Faced with so many cases of human and animal rabies, post-exposure prophylaxis is of vital importance. Unfortunately, many people who have been exposed to rabies often fail to take advantage of it, or are very late in starting treatment. A study of the reasons for this delay has been carried out in Abidjan hospitals. However, no data are available on the phenomenon in population settings, where many cases go unreported.

It is in this context that we initiated the present study, the general aim of which is to analyse the use of post-exposure prophylaxis among exposed subjects in the town of Dabou.

More specifically to:

- Describe the socio-demographic characteristics of exposed subjects;
- Evaluate the knowledge and attitudes of those exposed to rabies;
- Determine the different types of care sought following exposure to rabies.

Materials and Methods

Study setting

This study took place in the town of Dabou, capital of the Leboutou department. Together with Grand Lahou and Jacqueville, this department forms the Grands Ponts region, which has a population of 356,495 (RGPH, 2021). It is populated by the indigenous Adioukrou, Alladjan, Avikam and Ahizi peoples. Like all the regions of Côte d'Ivoire, there are also a number of Sénoufo and Malinké immigrants from the north, as well as nationals from neighbouring countries or from the Economic Community of West African States (ECOWAS), notably Burkinabe, Malians, Ghanaians, Mauritanians, Togolese, Beninese, Nigeriens and Nigerians. The town of Dabou, capital of Leboutou, is located 57 km from Abidjan, the economic capital of Côte d'Ivoire. It is bordered to the south by the Ebrié Lagoon, to the east by the Agneby, to the west by Grand-Lahou and to the north by the town of Sikensi, with an estimated population of 75,991 (Figure 1).

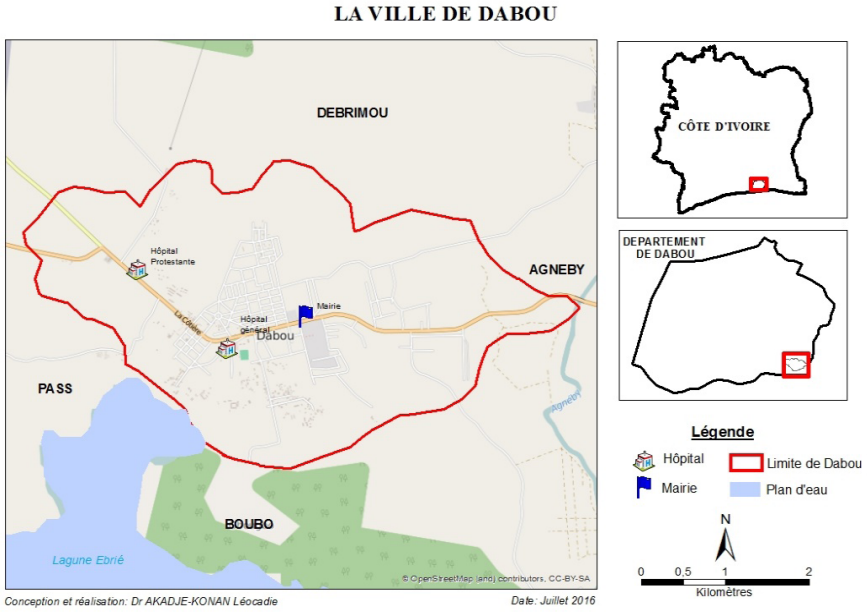

Figure 1: Location of the study area. **Source:** Dr Akadje-Konan Léocadie, géographe.

Type and duration of the study

This was a descriptive and analytical cross-sectional study, which took place from 1 February to 1 April 2016, i.e. over three (03) months.

Study population

The study population consisted of people of all ages and sexes who had been living in Dabou for at least one month.

Inclusion criteria

All subjects who had been exposed to a bite scratch or lick from an animal likely to transmit rabies and who had been living in Dabou for at least one month.

Non-inclusion criteria

Subjects exposed to rabies who refused to answer the questionnaire, who were away from home at the time of the survey and who had not lived in Dabou for at least one month were not included in the study.

Sampling

The technique used was simple random sampling. The sample size was calculated using the following formula: Schwartz Schwartz formula:

$$n = \frac{t2 \times p\,(1-p)}{m2}$$

n = number or size of sample; p = prevalence at 30%; t = confidence interval at 95% (standard value of 1.96) and m = margin of error at 5% (standard value of 0.05).

Therefore, for an event with a 30% probability of occurrence, assuming a confidence level of 95% and a margin of error of 5%, the sample size is:

$n = 1.96^2 \times 0.3 \times 0.7 / 0.05^2 = 322.6944$ or 322

Tools and data collection

This was a household survey. A questionnaire was drawn up and submitted by interview to all subjects. It included the following variables: the demographic and socio-professional characteristics of exposed patients, the study of the therapeutic itinerary of exposed patients, and patients' knowledge of rabies. The questionnaire consisted largely of closed questions, but also included open-ended questions to allow subjects to express themselves freely.

Conduct of the survey

The survey was preceded by a pre-survey of 20 households in the Koweït neighbourhood, a sub-neighbourhood of Yopougon (Abidjan). This enabled us to validate the questionnaire. All the items were comprehensible to everyone.

The survey itself consisted of a household survey throughout the town of Dabou. We identified two neighbourhoods by random selection, one precarious and one residential. Within each neighbourhood, we first identified the centre. Then, depending on the direction of the pen toss, we identified the first household. Next, we went through all the households in turn. After having covered all of these two neighbourhoods, as we had not reached the required number of people to be surveyed, we continued our survey in the other neighbourhoods of the town of Dabou using the same procedure. Once the household to be visited had been identified, and after the greetings, we asked the head of the family or his or her representative how many people were in the household, and then we asked whether anyone had been bitten or scratched by an animal likely to transmit rabies. If they had, we administered the questionnaire to them with their consent. When the victim was a child, the parent or legal guardian answered the questionnaire. If the victim was a child, we thanked the parent or legal guardian before going on to the next household, but not before recording the number of people in the household. In this way, we visited all twelve (12) neighbourhoods in Dabou.

Data entry and analysis

The data collected were entered and analyzed using Epi info software version 3.5.4 (2011). The data obtained at the end of this analysis were distributed in the form of frequencies in tables of statistical distributions, diagrams and histograms. Comparisons were made using the Chi 2 test with a significance level of 5%.

Ethical considerations

All regulatory and ethical research procedures in Côte d'Ivoire have been respected. We obtained authorization from the health and administrative authorities of the Dabou department prior to data collection; we obtained informed consent from participants prior to data collection. "During the course of our study, we took into account the need to respect the confidentiality of the information collected, the anonymity of the patients, the informed consent of the patients or their legal guardians, and the need to inform in advance the head of department of the National Institute of Public Hygiene (INHP), the Regional Director of Health and the Departmental Director of Health. In addition, we obtained authorization from the Mayor of the town of Dabou following a letter we sent to him." In Côte d'Ivoire, attitude and practical knowledge surveys carried out as part of the drafting of research subjects for the defense of state medical these are not subject to submission to the ethics committee.

Results

Socio-demographic characteristics

The most common age group was between 10 and 19, with 204 cases out of 322, a rate of 58.8%. The extremes were 1 year and 71 years. The mean age was 20.37 ± 10.28 years. There were 216 men and 106 women in the series, giving a sex ratio of 216/106 = 2.04.

50.2% of the respondents lived in Dabou town, in the wrood (25.1%) and old Dabou (25.1%) districts, and 53% had secondary education, 20.5% primary education and 15% illiteracy.

The professional category made up of students was the most represented at 64.8%, followed by self-employed professionals at 19%. Of the subjects who declared their income, 30.6% (27 individuals) had a monthly income of between 60,000 and 150,000 and 47.6% (42 workers) had no monthly income (Table 1).

Distribution of subjects surveyed according to :								
Age (years)			**Level of education**			**Monthly income**		
Brackets	Workforce	%	**Level**	**Workforce**	**%**	**Income**	Workforce	**%**
0-9	20	6,1	Illiterate	48	15	< 60 000	6	6,5
10-19	189	58,8	Primary	66	20,5	[60 000 – 150 000[	27	30,6
20-29	60	18,7	Secondary	171	53,0	[150 000 - 300 000[	6	7,1
30-39	30	9,2	Superior	37	11,5	> 300 000	7	8,2
40-49	15	4,6	**Total**	**322**	**100**	No income	42	47,6
50 ans +	8	2,6				**Total**	**88**	**100**
Total	**322**	**100**						
Distribution of subjects surveyed according to :								
Type			**Occupation**			**Place of residence**		
Sex	**Workforce**	**%**	**Jobs**	**Workforce**	%	**Neighbourhoods**	**Workforce s**	**%**
M	216	67,1	Security agent	3	0,9	Caiman City	44	13,8
F	106	32,9	Student	25	7,8	Old Dabou	81	25,1
Total	**322**	**100**	Pupil	209	64,8	Wrood	81	25,1
			Private civil servant	9	2,9	Nursery	32	9,8
			Civil servant	11	3,5	Tchotchoraf	7	2,3
			Liberal profession	61	19	Mermeville	5	1,7
			Others	4	1,2	Palmafrique	4	1,4
			Total	**322**	**100**	CIE City	4	1,4
						SODECI City	4	1,2
						Neighbourhood djoulabougou	8	2,6
						Bastos	15	4,6
						Gédéon	35	11
						Total	**322**	**100**

Table 1: Distribution of subjects surveyed.

Pet ownership

Of the 322 subjects surveyed, 176 (55%) had a pet at home, compared with 146 (45%) who did not. Of these 176 individuals, 115 (65.3%) owned dogs and 57 (32.5%) cats. Monkeys and goats accounted for 1.1% each.

Respondents' knowledge of rabies

172 respondents (53%) had no knowledge of rabies. 150 respondents (47%) knew about rabies. Of the 150 respondents who said they knew about rabies, the main signs of human rabies mentioned were agitation (59.3%), followed by confusion (12.3%) and hydrophobia (9.9%). Only 20.4% of respondents knew how long it took for the signs of rabies to appear. In addition, 212 respondents (66%) knew nothing about the fatal nature of rabies; 25.4% (82 subjects) knew that rabies is fatal and 8.6% (28 respondents) did not know that it is fatal.

Among the respondents, 248 (76.9%) were bitten, 54 (16.7%) scratched and 18 (5.5%) licked. Among the animals likely to transmit rabies, dogs and cats were the most frequently mentioned, with frequencies of 301 and 175 respectively. As regards respondents' knowledge of the cost of the vaccine, 32.3% (104 subjects) knew the exact price of the vaccine, which is 8,000 CFA francs. In addition, 65% (208 respondents) thought that the rabies vaccine was expensive and 34% thought it was affordable.

Attitudes of respondents after exposure

293 (91.1%) of the exposures were in the street, compared with 29 (8.9%) at home. 179 respondents (55.6%) had been attacked, 102 (31.7%) were victims of a reactionary attack and 25 people (7.8%) had suffered collective bites. Of the animals involved in the bites, dogs accounted for 83%, followed by cats (14.1%). In addition, 61.1% of subjects had been exposed to a bite, 36.3% to a scratch and 2.6% to licking.

The site of the bite was the lower limbs in 61.6% of cases and the upper limbs in 29.4%. As for the fate of the bitten animal, 37.6% of the animals were strays, 28.6% had an unknown status and 28% were dead, including 8.1% that had been slaughtered. In terms of the animal's vaccination status, only 24.2% of respondents had vaccinated their animals, compared with 17.3% who had not. 58.5% of respondents had no idea about the vaccination status of their animals.

Determining the different types of care sought

Among the post-exposure gestures, "wash the wound", "administer SAT", "self-medication", "administer VAR" and "do nothing" were the most frequently cited, with frequencies of 148, 58, 46, 39 and 30 respectively. Of the 322 respondents, 56.5% had first resorted to a health centre, 28.2% had not received any care and 10.7% had consulted healers.

Use of the PPE

280 subjects surveyed, i.e. 87%, had not used post-exposure prophylaxis (Figure 2). In terms of time taken to consult a doctor, 42.5% had done so between 24 and 48 hours, 34.1% less than 24 hours and 23.3% more than 48 hours.

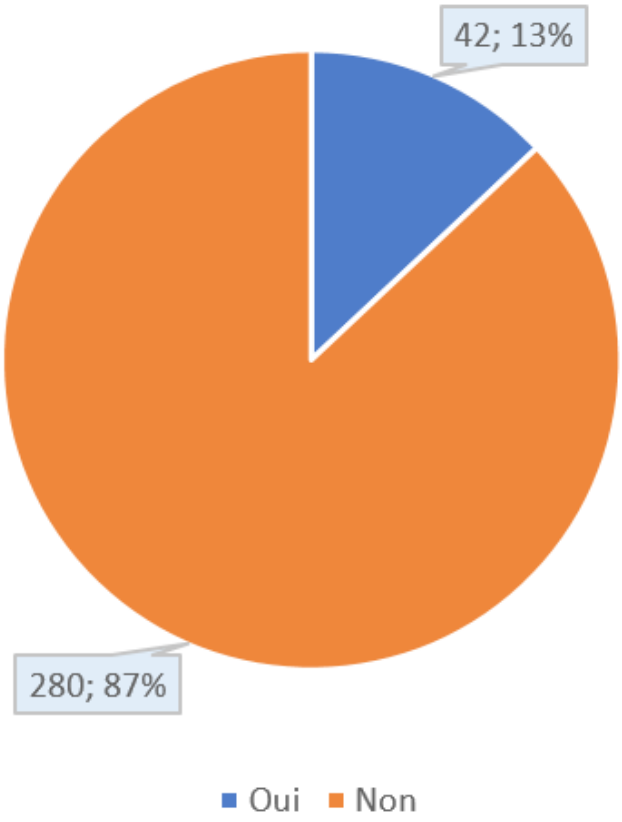

Figure 2: Breakdown of subjects by use of PPE **(N=322)**.

Reasons for not seeking treatment

33% of victims did not resort to PEP because they considered the injury minimal, 19.6% did not have financial means and 18.6% believed that the animal was vaccinated (Table 2).

Reasons for not using the PPE	Workforce (n)	Percentages (%)
Vaccinated animal	60	18,6
Absence of the owner	30	9,3
Absence of parents	33	10,2
Minor injury	106	33
Lack of resources	63	19,6
Neglect	30	9,3
Total	**322**	**100**

Table 2: Distribution of subjects according to reasons for not using PEP (**N=322**).

Obstacles to PEP consultation

29.55% did not know that in the event of exposure they had to go to the RAC to be vaccinated, 14.33% had a transport problem, 13.46% mentioned the refusal of the owner of the biting animal and 20.32% gave various reasons (Table 3).

	Frequencies (n)	Percentages (%)
Did not know	95	29,55
No means of transport	46	14,33
Public holiday	24	7,35
Going to the healer	26	7,94
Refusal by the owner	43	13,46
No time	23	7,05
Other reasons	65	20,32
Total	**322**	**100**

Table 3: Répartition of subjects according to the determinants of consultation time (**N=322**).

The existence of statistically significant links

Statistical relationships between consultation time and assessment of vaccine cost. There was a statistically significant relationship between the assessment of the cost of the vaccine and the delay in consultation. Our study showed that the more expensive patients thought the vaccine was, the less likely they were to be vaccinated (Table 4).

Estimated cost of the vaccine	Consultation time (hour)		
	<24	24-48	>48
Affordable	10	35	7
Expensive	17	31	34
Total	**27**	**66**	**41**
X^2 :13.81	p : 0.000	(Significatif)	

Table 4: Distribution of subjects according to the relationship between consultation time and assessment of the cost of the vaccine.

Relationship between level of education and health centre attendance

There is a statistically significant link between the level of education and the health centre. The more educated the subjects, the more they consulted the health centres (Table 5).

Level of education	Health centre	
	Yes	No
Illiterate and Primary	21	102
Secondary and higher education	64	1605
Total	85	262
X^2: 5.07	p : 0.024	(Significatif)

Table 5: Distribution of subjects according to the relationship between level of education and health centre attendance.

Statistical links between the different "use and negligence", "use and lack of financial means" and "use and injury considered minimal" complexes

The different complexes "Use and negligence" (Fisher exact; 0.009; Significant), "Use and lack of financial means" (Fisher exact: 0.028, Significant), "Use and injury considered minimal" (Fisher exact: 0.004, Significant) show that there is firstly a statistically significant link between use of the PEP and negligence, i.e. the more negligent the subjects are, the less they use the PEP. Secondly, there is a statistically significant link between use and lack of financial means. In other words, the more subjects lacked

financial means, the less they used a health centre. Finally, there was a statistically significant link between use of a health centre and an injury judged to be minor. The more the subjects judged the injury to be minor, the less they used a health centre.

Discussion

Limitations of the study

This study has a number of limitations, in particular: the fact that the respondents had to use their memory to find the notion of a bite could have caused information bias, and the parents who answered the questionnaire in place of their children could have given inaccurate answers about the circumstances and the date because they were not always present at the time of the bite. Despite these limitations, the study remains relevant and could contribute to improving compliance with post-exposure prophylaxis in Côte d'Ivoire. Despite these limitations, the study remains relevant and could contribute to improving compliance with post-exposure prophylaxis in Côte d'Ivoire.

Socio-demographic characteristics

Age

In this study, the age group most exposed to the risk of rabies infection was the 10-19 age group, which accounted for 58.8%. The results are in line with those of Tiembré [22] in 2009, who found 62.3%, Lezou [25] in 2012 and Noufé [33] in 2015, who found proportions of 57.5% and 51% respectively in the 10-19 age group. Furthermore, in 2001, Chevalier [7] in France stated that more than 50% of all dog bites in the general population occurred between the ages of 0 and 18. This predominance can be explained by children and adolescents playing with dogs.

Gender

The subjects surveyed were male in 67.1% of cases. These results corroborate those of Dao (66%) and Mfupa (60%) in Mali [34,35] in relation to sex.

In Côte d'Ivoire, this male predominance is usual and has been described by several authors, including Aké [37] who found 57%, Detchi [37] with 56.3%, and Lezou [25] with 62.3%. In our context, this situation could be explained by a difference in lifestyle and professional activities, which would expose male subjects more.

Level of education

In the present study, 53% of subjects had secondary education. These results are much higher than those of Noufé [33], who found a rate of 24.4% in Abidjan in 2015. This difference can be explained by the fact that Noufé's study was limited to subjects who came for a post-bite consultation. Younger subjects may not have sought medical attention because they were negligent, and their parents may not have referred them.

Place of residence

The risk of exposure to rabies infection is greatest in two districts of the town of Dabou, which together account for half of all victims (50.2%). This predominance in the Ancien Dabou and Wrood neighbourhoods could be due to their precarious nature, with a high child population and many stray dogs.

Conversely, the low rates observed in the Mermeville (1.7%) and Cité CIE (1.4%) neighbourhoods, which are residential areas, could be explained by the low number of stray dogs and, above all, the population's level of education. The better educated people are, the more aware they are of the risk of rabies infection.

Occupation

In 64.8% of cases, schoolchildren were the most exposed. According to Tiembré et al [22], students and housewives were the occupations most affected. Ouattara et al [38] found that the majority of students and workers were of low socio-economic status. The results are also similar to those of Diehi [39] in 2012 (36.3%) and Noufé [33] in 2015 (43.7%). This predominance could be explained by the fact that the majority of victims were young people. It should also be noted that schoolchildren are more mobile and like to play with animals [25].

Monthly income in CFA Francs

In this study, 47.6% of the subjects had no income. Most were pupils and students. These results are similar to those of Tiembré in Côte d'Ivoire [22] in 2009, who found a proportion of 57%. Our results are also consistent with those of Ouattara et al. in Côte d'Ivoire [38], who found that the majority of students and workers were of low socio-economic status.

Pet ownership

The subjects surveyed owned a pet at home in 54.8% of cases. These figures are similar to those of Diehi [39] and Tiembré [1] in 2001, who found 56% and 76.9% respectively of exposure at home. This could be explained by the fact that growing insecurity is prompting residents to own guard animals and pets [25].

Distribution of animals

Dogs were the most common type of animal in the home, accounting for 65.3%. These results are comparable to those of Kayali in N'Djamena, where 85% of exposures were related to family dogs [40] and 85% of bites were caused by pet dogs [40]. The same is true of Dao [14] in his 2006 study in Mali, who noted that in 97.1% of cases, the biting animal was the dog. Tiembré [1] in 2007 found 94.8% while Noufé [33] in 2015 found 69.6%.

These figures could be explained by the fact that dogs are, for several reasons, man's best companions and guardians.

Respondents' knowledge and attitudes about rabies

Respondents' knowledge of rabies

Most of those exposed were unaware of the symptoms of rabies and how long it takes for signs to appear. Hydrophobia was mentioned in only 9.9% of cases, and 72.6% did not know how long it took for signs to appear. These results show how little this population knows about rabies. Diehi [39] in 2002 found that 61.1% of people were unaware of the disease. According to Tiembré [22], rabies is one of the neglected diseases, which explains the population's lack of awareness of the disease. This general lack of awareness leads to neglect of post-exposure prophylaxis. In addition, 8.6% of people surveyed were unaware that rabies is 100% fatal once reported. The results corroborate those of Noufé in 2015 who found 8.5% [33]. On the other hand, Lezou [25] found 19.9% in his 2012 study. Despite the decrease in the proportion of people unaware of rabies, the situation remains worrying because people who are unaware of the fatal state of rabies lag behind in starting PEP. In 1999, Aké [36] pointed out that ignorance of rabies was one of the reasons for the low rate of vaccination of domestic animals. The mode of transmission was dominated by bites (76.9%) and scratches (34.9%). A study carried out by Diallo [41] in 2009 showed that 94.5% of cases involved bites and 3.8% of scratches. These results could be explained by the fact that animals use either their mouths or their claws to attack or to defend themselves.

In terms of rabies vectors, dogs (93.4%) and cats (54.2%) were the main animals that transmit rabies. These results corroborate those of Detchi [37] in 2000, who found 87.8%, as well as those of N'Guessan [42] in 2002, who noted 93.5%, and Aké [36] in 1999, who showed that 90.6% of dogs were mainly responsible for rabies exposure. Whatever the study, the dog is the animal most frequently implicated because of its proximity to humans, either as a pet or for protection [38, 1, 22].

With regard to the cost of the vaccine, respondents reported that it cost 8,000 CFA francs, and 65% thought it was expensive. Noufé [33] noted in his study that 74.5% found the vaccine expensive. In fact, whatever the protocol used, the total cost of a complete treatment varied between 32,000 and 40,000 FCFA. It should be noted that Diehi [39] in 2001 noted that the cost of treating an exposed subject varied between 9,100F and 53,875F CFA. This excessive cost could lead to delay or abandonment of PEP.

Information on exposure

The vast majority of exposures occurred in the morning and afternoon, and 91.1% of exposures occurred in the street. In Côte d'Ivoire, canine or urban rabies is the main source of human rabies, with almost 90% of cases secondary to a stray dog bite [43]. In Chad, on the other hand, 85% of bites are caused by pet dogs [40]. Our results are at odds with those of Noufé [33] in 2015 and Diehi [37] in 2002, who found respectively that in 78.0% and 56% of cases exposure occurred at home.

The type of exposure most frequently encountered in this study is comparable to that of Tiembré [22] in 2009, Detchi [37] in 2000, Diop et al [35] in 2007 and Fadwa [44] in 2006, who found (63%), (90.6%),(98%) and (50.53%) respectively. This study shows that bites occurred preferentially on the lower limbs, as in the studies by Tiembré [1], Mfupa [35], Dao [14] and Fadwa [44]. This preferential location could be explained by the fact that these parts of the body are easily accessible to the animal. On the other hand, in another study, Ouattara [38] found that the upper limb was the most affected because it is put forward by the victims to protect themselves from the attack.

Respondents' attitudes towards exposure to rabies

Biting animals were alive in 40.5% of cases in our study. These results are much lower than those of Tiembré [1], Diehi [39], N'guessan [42] and Detchi [37] who reported respectively that in (74.9%), (81.7%), (85.8%) and (86.6%) of cases, the animal was still alive.

In addition, more than half the population (58.5%) had no idea of the vaccination status of the biting animal. Our figures are similar to those of Noufé [33] in 2015, who found 43.4% compared with 82.3% in Diehi [39] in 2001, Morvan [45] with 79% in 1992, and Jamshid [16] with 79.2% in 1992. This situation is worrying because it may increase the risk of exposure to rabies infection.

In addition, the delay between the bite and the consultation was 24 to 48 hours after exposure in 42.6% of cases. Our results are similar to those of Fadwa [44] who, in her study, found a delay depending on the type of animal and the site, extent and nature of exposure. For dogs, she found a mean delay of 2.67 ± 4.08 days. Del Valle [46] in his study in Nancy found 2.4 days ± 21 days. On the other hand, Dao [34] and Traoré [47] in Mali found respectively that in (18.8%) and (17%) of cases, the subjects were presented on the same day. The emphasis should be on raising awareness to encourage people to seek medical advice as soon as possible.

Types of care sought

This study reveals that 46% of exposed subjects stated that they had washed the wound after exposure. Our results corroborate those of Tiembré [48] in 2009 and Noufé [33] in 2015, who found rates of 44% and 61% respectively. It should be noted that the rabies virus is very fragile. Cleaning must therefore always be

undertaken. It is therefore advisable to consult a health centre after exposure.

In addition, the respondents stated that they had undertaken SAT in 20.2% of cases. Del Valle [46] in his study found isolated serotherapy in 9 cases, i.e. 0.8%. On the other hand, Fadwa [44] in his study in Mali found that 89% of people exposed to rabies had not received anti-tetanus prophylaxis. This situation is seen in almost all bite cases. Although SAT is not the specific treatment for rabies, it is still indicated because the wound is an entry point for the telluric bacillus.

In addition, only 12% of subjects used PEP. These results are contrary to those of Tiembré [22] in Côte d'Ivoire in 2009, who found 92%, and those of Fadwa [44] in Morocco, who found that 86.38% had undergone PEP. In a sense, the majority of the subjects surveyed did not undertake PEP. The reasons for this were ignorance, negligence, lack of financial resources and the remoteness of Rabies Control Centres (RACs). In fact, 21.90% (71/322) of subjects consulted a RAC for more than 48 hours. This situation is similar to the observations of Ouattara [40], where non-use of PEP appears to be the result of human ignorance, negligence and unawareness. According to Tiembré et al [1], rabies is a disease that is often poorly understood. In addition, the low economic level of the population is a major obstacle to seeking care [39]. Other factors, such as geographical accessibility of the rabies centre by users and conflicts between victims and pet owners, are thought to contribute to further delays in consultations [37].

With regard to the cost of the vaccine, it has been observed that there is a distribution of subjects according to the relationship between the assessment of the cost of the vaccine by the subjects surveyed and the delay in consultation. The higher the cost was considered by the subjects surveyed, the less they were vaccinated. Our results are in line with those of Fadwa [50] and Dao [35] in Mali and Tiembré [22] and Diehi [41] in Côte d'Ivoire. On the other hand, sex, age, knowledge of rabies, vaccination status of the animal, number of lesions and monthly income had no influence on the delay in consultation. Contrary to the study by Aké in Côte d'Ivoire in 1996 (36), which showed that that the level of education had an influence on consultation times. The more educated the patients, the shorter the consultation time.

Conclusion

This study has shown that exposure to rabies is very common in the town of Dabou, particularly in the densely populated districts of Ancien Dabou and Wrood (50.2%). The biting animal is mainly a stray dog, and the victims are generally young people (20 ±10 years), most of whom have secondary education (53%). The place of bite was generally the street (91%). Despite the lethal nature of rabies, there is a lack of awareness of the disease. The services involved in the fight against rabies must therefore step up their efforts to educate the public about the risks associated with rabies infection, placing particular emphasis on the importance of post-exposure prophylaxis. The Ministry of Health must introduce a policy of subsidizing rabies vaccines, given the lethal nature of the disease and, above all, with a view to eliminating it by 2030.

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