
3

Causes of Death among Aka Pygmies of the Central African Republic¹

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Death comes like the rain, suddenly . . .²

3.1. Aims of the Investigation

The intent of this study was essentially twofold: (1) to identify and describe native syndromes Aka Pygmies give for causes of death and (2) to correlate native syndromes and illnesses, whenever possible, with those defined in the Western medical scheme. No comparable studies of death etiology among Aka or other African Pygmies are known to the authors, although other studies have examined specific aspects of general health (Pennetti *et al.*, Chap. 8, this volume) and disease, such as those on parasitism (Price *et al.* 1963; Pampiglione and Ricciardi, Chap. 11), and cardiovascular disease (Mann *et al.* 1962).

The present data were collected between 1975 and 1980 from interviews with Aka associated with the villages of Bagandu in the Lobaye

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² Theme of the mourning song for Injele who died in Moboma.

prefecture and Ndele in the Haute Sangha prefecture of the Central African Republic (C.A.R.). Data were collected in the course of psychological (van de Koppel 1983) and anthropological (Hewlett *et al.* 1982) research in the region. During elicitation of general kinship and biographical data from Aka adults, they were asked about deceased parents, spouses, or children. Aka were questioned about the illness (*bokono*) that caused the death of their parent spouse, or child, the approximate age at death, and an estimated date of death. Aka do not know exact ages for themselves or others and therefore general categories and associated criteria were utilized in trying to determine the age at death:

- a. Infant—not walking, between birth and about 12 months, called *molepe*
- b. Early childhood—walking, between about 1 and 5 years of age, called *mona*
- c. Late childhood—helping with household chores, between about 6 years of age and puberty
- d. Adolescence and young adulthood—menstruation, pubic hair, breast development, females called *ngondo*, males called *bokala*
- e. Adult—usually married with young children, women before menopause
- f. Adult in middle age—no young children, but still active in hunting and gathering
- g. Aged—more or less dependent
- h. Child—further details unknown
- i. Adult—further details unknown

Estimated date of death was divided into four very general categories—after 1970, between 1960 and 1970, before 1960, and unknown. An event calendar, where significant events known to both Aka and local villagers are established and the villagers provide precise dates for the event, was used to estimate time of death (see Hewlett *et al.*, Chap. 4).

Approximately 170 Aka adults from Bagandu, about one-third of the Aka population associated with Bagandu, and 102 Aka and 45 Bofi-Aka, the complete Aka adult population of Ndele, were interviewed. The Bofi-Aka are distinguished from the Aka in Ndele because they identify themselves as Bofi, a local village ethnic group, speak the Bofi language, not the Aka language, and reside in the village most of the year. They have discarded components of their Aka identity in the process of moving toward a more sedentary life. Causes of death for 430 males and 266 females were identified from all Aka informants.

3.2. Translating Aka Terms and Symptoms into the Western Medical Model

Table 3.1 lists all data collected in Bagandu and Ndele. An Aka term and syndrome were translated into a Western medical disease category only when the Aka symptoms clearly indicated a disease in the Western medical model. Physicians were consulted both in the field (at Bangui and M'Baiki) and after returning from the field to discuss the native syndromes and possible translations.

Even though they speak the same language, linguistic distinctions exist between Bagandu and Ndele Aka. For instance, in Bagandu, diarrhea is called *mosele*, whereas in Ndele the term is *sende*. To check linguistic differences, each term and corresponding symptoms from one area were discussed with Aka from the other area; Ndele Aka were questioned about Bagandu terms and symptoms and vice versa. Ndele is 150 kilometers directly west of Bagandu, and the regional linguistic differences may be the result of contact with different farming populations. Near Bagandu the Aka have been associated with Lissongo, Mbaka, and Ngandu villagers, while Ndele Aka have been associated with Pande, Yanguere, Baya, and Bofi villagers. As one would expect the Bofi-Aka have completely different terms for the illnesses (except for measles) because they speak Bofi, not Aka.

All causes of death were classified by the authors into nine general categories similar to those developed by Preston *et al.* (1972) for international data collection of causes of death. The categories “acute” and “culturally defined, outside of Western medical model” are not part of the Preston classification, but are constructed here to possibly provide a more extended view of Aka death etiology. “Culturally defined, outside of Western medical model” includes illnesses well defined by Aka but for which a Western medical diagnosis was not possible. The category is somewhat redundant in that all Aka illnesses are “culturally defined.” In the Preston classification scheme they would have been lumped with “other” causes. The use of the categories is limited and they occasionally overlap. For instance, most of the infantile and early childhood diseases are also acute.

Many of the Aka terms and associated symptoms clearly indicated diseases in the Western medical model. For instance, Aka described the symptoms for *ekotu* as continuous coughing, difficulty in respiration, coughing up blood, and being weak and meager—a relatively clear description of respiratory tuberculosis. Nonfatal and occasionally fatal cases

Table 3.1 Number of Deaths Per Age Group and Sex by Common Name and Likely Local Aka Translation of Disease (Singular Form) for
 (1) Bagandu Aka, (2) Ndele Aka, and (3) Ndele Bofi-Aka.^a

	<u>a</u>		<u>b</u>		<u>c</u>		<u>d</u>		<u>e</u>		<u>f</u>		<u>g</u>		<u>h</u>		<u>i</u>		<u>b</u>
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Infectious and Parasitic																			
A. Respiratory tuberculosis																			
1. Ekotu									4	1	4	3	1			1	2		
2. Ekotu									2		2								
3. Hii									1				1						
B. Measles																			
1. Dinguengue	5	1	10	5	3	1	3	3	1						1	1	1		
2. Ginga	1	2	12	9	1	2	1	1				2				1			
3. Ginga		2	5	3		1	1					1							
C. Smallpox ^c																			
1. Kobolo		3			1	1		1					3	1	1				
D. Gonorrhea																			
3. Sobisi													1						
E. Yaws																			
2. Engolo		1			2														
F. Leprosy																			
1. Ngbele													1	1			1		
2. Bruma													1						
G. Schistosomiasis																			
1. Dikou					1								1						
H. Worms																			
1. Mozembe		1			1			1				1	1						
I. Malaria																			
1. Yunga		2	1	4	2	1							1						
J. Tropical ulcer																			
1. Penge					1	1			2	1	1		1	1	1	1	1	1	
2. Penge									1	1	1		1						
3. Badani									1										
Acute																			
A. Gastric hemorrh.																			
1. Amu wa na					Bilua			1				1	1						
					Malungu														

(continued)

3. CAUSES OF DEATH AMONG AKA PYGMIES

49

Table 3.1 (continued)

	<u>a</u>		<u>b</u>		<u>c</u>		<u>d</u>		<u>e</u>		<u>f</u>		<u>g</u>		<u>h</u>		<u>i</u>	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
B. Paralysis																		
1. Moodu					1						1							
C. Hernia																		
1. Mokuba											1				2			
2. Libundu											1			1				
3. Dangba											2			1				
D. Other acute abdomen																		
2. Mbom, awanga, and mobuka	1	4					2	1		2			1	2			1	
3. Climo and zele kpane							1			1	1		1					
Diarrheal																		
A. Diarrhea																		
1. Mosele	6	4	7	3	3	2	2		16	8	3	5		4	4	6	7	
2. Sende	1	2	6	2	1				12	9	12	4	1	3		1	1	
3. Soi									3	1			1					
Respiratory																		
A. Bronchitis																		
1. Mombandja												1						
2. Mombandja	3	1	1			1			1		3	2		1				
3. Mbandji					1				1	9	5		1	2	1			
B. Pneumonia																		
1. Uphe	1					1												
Violent and Accidental																		
A. Suicide																		
1. Epongi											1			1				
B. Murder																		
1. No specific term													1					
2. No specific term													1					
C. Falling from tree																		
1. No spec.tm. ^d									2		2							
2. No spec.tm.										2								
3. No spec.tm.										1								
D. Other hunt./gath. accident																		
1. No spec.tm. ^d									2		4	1		1		1		
2. No spec.tm.										1	1							

(continued)

Table 3.1 (continued)

	<u>a</u> M	<u>b</u> F	<u>c</u> M	<u>d</u> F	<u>e</u> M	<u>f</u> F	<u>g</u> M	<u>h</u> F	<u>i</u> M	<u>i</u> F
E. Accident playing as child										
1. No spec.tm. ^d					1		2			
2. No specific term					1					
F. Poisoning										
1. Diuwaza manga							1	3		
G. Snakebite										
1. Moto a mu wa na enzo					1		1	2		
Maternal										
A. During or after childbirth										
1. Mosama						4				1
B. Abortion										
1. Moukua						4				
Infantile and Early childhood										
A. Baby dies of malnutrition after mother's death										
1. No specific term	1				1		1			
2. Njala bene	1									
B. Malnutrition										
1. Tokombondo and sopo		1								
2. Sopo			1							
C. During or after childbirth										
1. Mosama			2							
D. Convulsions										
1. Ekila or ekila kema	10	10	5	3	1	1				2
2. Ekila or ekila kema	2	3	3							
E. Generalized skin infection										
1. Sue		1	1	1						
2. Sue		2	1	1						
Culturally defined, Outside of West. Medical model										
A. Witchcraft										
1. Amu wa diuwa dja dijundi		1	1	3		1	1	5	2	4
										2

(continued)

3. CAUSES OF DEATH AMONG AKA PYGMIES

51

Table 3.1 (continued)

	<u>a</u>		<u>b</u>		<u>c</u>		<u>d</u>		<u>e</u>		<u>f</u>		<u>g</u>		<u>h</u>		<u>i</u>	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
2. Balimba na gundu	2	1	2				4	5	10	4	1				2			
B. Illness of the rainbow																1		1
1. Kongo																	1	
2. Kole					2												1	
C. Married a person in mourning																		
3. Zele gora														1				
D. Child dies just before walking well because mother slept with another man ^e																		
2. Himbi					1													
E. Young child dies after mother eats rat ^e																		
1. Gbe	3	1																
F. Baby dies because mother slept with another man while pregnant ^e																		
1. Ekundi			1															
2. Ekundi			1															
3. Piana zan			1															
G. Mother dies because slept with another man while pregnant ^f																		
1. Ekundi							1											
2. Ekundi								1										
3. Ekundi or piana zan									2									
Other																		
A. Old age																6	2	9
1. Bokoto																3	2	6
2. Bokoto or ngombi (arthritis)																		
3. Alabo																1	2	
B. Severe mental illness																1	2	
3. Sumbi																		
	1		2	2														

(continued)

Table 3.1 (continued)

	<u>a</u>		<u>b</u>		<u>c</u>		<u>d</u>		<u>e</u>		<u>f</u>		<u>g</u>		<u>h</u>		<u>i</u>	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
C. Unknown to informant or unclear description																		
1. No specific term	9	7	8	3	4	1	1	.	2	11	4	3	1	1	7	4	21	13
2. No specific term	1	2			1				1			1						
3. No specific term								1										
Total	57	42	74	39	27	14	22	5	84	72	56	34	24	18	18	12	41	30

^a The definition of age classes a through i is given at the beginning of this chapter.

^b Causes of death are classified by the Aka names for the diseases in use in the three communities. Their names may differ, but they refer to the same syndrome. The most probable Western equivalent of each syndrome is also given.

^c Or monkey-pox.

^d No specific term.

^e Added to Infantile and early childhood in Table 3.2.

^f Added to Maternal in Table 3.2.

of yaws, leprosy, tropical ulcers, and other illnesses with distinct symptoms were seen by the authors and it was therefore possible to confirm the correspondence of Aka and Western terminology.

Further clarification is necessary for some Aka terms given in Table 3.1: (1) *mozembe* refers to "worms" (species nonspecific), often with heavy intestinal cramps; (2) *amu wa na bilua malungu* is death by vomiting blood and has been classified in the Western model as gastric hemorrhage; (3) *moodu* is any death that results from paralysis including, but not limited to, poliomyelitis; (4) *mbom*, *awanga*, and *mobuka* each describe a specific syndrome of pain, hardness, and/or swelling of a specific part of the abdomen, and all have been grouped under the general term of acute abdomen; and (5) *tokombondo* and *sopo* each describes a form of malnu-

trition—*tokombondo* is probably kwashiorkor while *sopo*, which literally means dirt, refers to a condition in which a child eats nothing but dirt and eventually dies of malnutrition. Other pathologies (possibly parasites) may also be involved with *sopo*. *Mombandja* refers to a wide range of respiratory problems with symptoms that include pain and throbbing on the sides of the upper part of the chest and extreme dyspnea. It cannot be translated into a specific disease in the Western model, yet a diagnosis of bronchitis, bronchopneumonia, emphysema, or respiratory infection might be suggested. To indicate the inability to assign a specific Western translation to the Aka term *mombandja* in Table 3.1, a question mark follows the term bronchitis.

Two other Aka syndromes were translated into Western terms on the basis of general symptoms. *Ekila* or *ekila kema*, “illness of the monkey,” one type of *ekila*, is a childhood disease with symptoms that include convulsions, stiffness of the body, especially of the face and neck (with the *kema* form, some informants said, the face becomes so rigid that it looks like a monkey gritting its teeth), and occasionally a fever. The disease is believed to be caused by the mother or child eating a taboo food; in the case of *ekila kema*, an individual has eaten a taboo monkey. Possible Western diagnoses might include tetanus, which may cause the face and jaw to be stiff like those of a monkey, meningitis, and epilepsy. Table 3.1 lists *ekila* as convulsions. *Sue*, “illness of the fish,” is also a childhood illness associated with a dietary taboo, in which the skin is said to look like that of a fish (ichthyosis).

A few Aka illnesses did not have Western medical equivalents. The causes of death under the “culturally defined, outside of Western medical model” category represent Aka sanctions or social control mechanisms; they are culturally defined patterns of deviant social behavior which are believed to result in illness and/or death. Examples include (1) *ekundi*, in which a child or mother dies because the mother committed adultery while she was pregnant; (2) *gbe*, in which a child dies because a parent ate a taboo rat (*Cricetomys emini*); (3) *dikundi* or *balimba*, witchcraft; (4) *himbi*, in which a child dies because his or her mother had intercourse before the child could walk well; (5) *zele gora*, in which a woman dies because she marries while still in mourning for her previous husband; and (6) *kongo* or *kole*, “illness of the rainbow,” in which an individual dies after walking in a damp spot in the forest where a snake, which has colors of the rainbow, rested. With *kongo*, the individual experiences paralysis of the legs. The foot and leg swell and are painful to touch or move. Traditional treatment includes puncturing the swollen leg to release pus and fluid (“poison”), thus possibly indicating a bacterial infection.

Some of the cases of *kobolo* were reported to have occurred after the worldwide eradication of smallpox, so most likely these were cases of a rare disease called monkey pox (Widy-Wirski, W.H.O. physician, personal communication). In 1984, four Aka died from what they called *kobolo*, but what was diagnosed as monkey pox by a W.H.O. physician.

Lastly, the category "unknown to informant or unclear description" includes (1) illnesses unknown to the informant, his camp, and the traditional healer (*nganga*), or sometimes called by spirits (*edjo*); (2) illnesses of unknown cause because the informant was not present or was too young to remember; and (3) other causes in which an unclear description of the illness is given and it is not possible to reconfirm the term or symptoms with other Aka or the *nganga*.

3.3. Summary of the Data

Tables 3.2-3.4 summarize the data from Table 3.1. Table 3.2 lists the totals and overall percentages for the nine categories, and indicates that infectious-parasitic and diarrheal causes of death account for nearly half of all Aka causes of death. Only slight differences between males and

Table 3.2 Aka Causes of Death by Category (Summary of Table 3.1)

	Number of <u>Deaths</u>		Percentage		Total percentage
	M	F	M	F	
Infectious and parasitic	86	63	21.3	23.7	22.3
Acute	24	8	6.0	3.0	4.8
Diarrhea	86	55	21.3	20.2	21.1
Respiratory	24	12	6.0	4.5	5.4
Violent and accidental	26	10	6.4	3.7	5.4
Maternal	0	13	0	4.9	2.1
Infantile and early childhood	35	27	8.7	10.1	9.3
Culturally defined, outside medical model	39	18	9.7	6.8	8.5
Other and unknown	83	60	20.6	22.5	21.4
Total	403	266			

Table 3.3 Comparison of Causes of Death for Aka Adults and Children.
 Table A Ranked by Five Leading Causes Among Adults and Table B Among
 Children.

A. Ranked by five leading causes among adults

Cause of death	Adult percentage	Child percentage
1. Diarrhea	26.7	12.9
2. Witchcraft	10.8	3.2
3. Old age	8.8	0
4. Bronchitis?	7.4	2.8
5. Accidents: falling from tree, hunting or gathering, and (for children) playing	3.7	1.3

B. Ranked by five leading causes among children

Cause of death	Child percentage	Adult percentage
1. Measles ^a	23.1	1.7
2. Diarrhea	12.9	26.7
3. Convulsions	12.9	0
4. Witchcraft	3.2	10.8
5. Malaria	3.2	0

^a 1978-1980 epidemic.

females exist for most categories. In the acute category only males died from gastric hemorrhage (3), paralysis (2), and hernias (7). Males were also twice as prone to violent or accidental death; only males experienced death by murder (2), by falling from a tree (7), and by snakebite (4).

Table 3.2 lists the three leading causes of death for all Aka interviewed. Diarrhea is by far the principal cause of death. Three forms of diarrhea that resulted in death were described: (a) diarrhea with blood, *mesele na menda* (Bagandu Aka term) lasting approximately 1-3 months before death; (b) diarrhea with blood lasting a short time (approximately less than 10 days) before death; and (c) diarrhea without mention of blood

Table 3.4 Five Leading Causes of Death in Three Groups of Aka Pygmies

Ndele Aka (N = 193)		Bagandu Aka (N = 407)		Ndele Bofi-Aka (N = 65)	
Cause of death	Percentage	Cause of death	Percentage	Cause of death	Percentage
Diarrhea	28.5	Diarrhea	19.9	Bronchitis?	30.8
Measles	16.6	Measles ^a	8.3	Measles	20.0
Witchcraft	15.5	Convulsions	7.9	Severe mental illness	7.7
Convulsions	7.3	Witchcraft	4.9	Diarrhea	7.7
Bronchitis?	6.7	Respiratory tuberculosis	3.9	Other acute abdominal disease	6.2

^a Bagandu Aka have a lower incidence of measles because 60% of the Bagandu data was collected before the measles epidemic of 1978-1980. The epidemic actually resulted in more deaths and lasted longer in Bagandu than in Ndele.

or duration of the illness. The first two types correspond well with the Western symptoms of amoebic dysentery. Measles, the second single leading cause of death, resulted in 12% of all Aka deaths; an exceptionally high percentage given the short period of the epidemic (late 1978–early 1980). Witchcraft is the third leading cause of death. The significance of this seriously questions Turnbull's assertion that witchcraft plays a minor role in African Pygmy cosmology, but it may reflect differences between groups or greater acculturation since the time of his fieldwork.

Table 3.3A indicates the leading causes of death for children with comparable percentages for adults, while Table 3.3B lists the same information for adults. Adults are more than twice as susceptible as children to diarrhea, witchcraft, *mombandja*, and accidents, while essentially only children die from measles, convulsions, and malaria.

Table 3.4 compares the causes of death of three Aka groups. The distinctions between the groups might be the consequence of variations in environments (e.g., population density or introduced pathogens), cultural practices and beliefs, the time data were collected, and the level of acculturation.

The Bofi-Aka are more acculturated than the other two groups of Aka. They maintain their camp in the village year-round and prefer to speak the Bofi language of the villagers instead of the Aka language. Frequency of smoking also distinguishes Aka from Bofi-Aka. All Aka like to smoke tobacco, but Bofi-Aka, both men and women, smoke more frequently than Aka. Villagers "pay" Bofi-Aka with tobacco, Bofi-Aka trade forest food items for tobacco, have tobacco plots of their own, can frequently be seen walking around the village smoking a pipe, and, unlike Aka, they do not share the pipe or cigarette with others. A cultural emphasis on tobacco use among Bofi-Aka is evident, especially when compared to Aka or even villagers, and may, in part, explain why the number one cause of death in this group is respiratory in nature. Quantitative data would be useful to substantiate the qualitative observations. Another "illness" apparently accompanying Bofi-Aka acculturation is *sumbi*, "going crazy." Not a single individual from the other two groups mentioned a death occurring from *sumbi*, or anything similar, while five Bofi-Aka were identified as having died from it. Bofi-Aka were also the only Pygmies to report a death due to venereal disease, another indicator of their movement toward village life.

Variation exists between the three groups in the prevalence of death by witchcraft from 0 among the Bofi-Aka, where one might instead expect a high percentage of deaths from witchcraft due to contact with villagers, to 5% among Bagandu Aka and 15% among Ndele Aka. Regional prefer-

ences and adaptations, the small number of Bofi-Aka interviewed, and influence of villagers of different ethnic affiliations with distinctive cultural systems are all possible factors that could be responsible for this variation.

Other regional and group variations also exist. Only Bagandu informants attributed mortality to smallpox, schistosomiasis, worms, malaria, gastric hemorrhage, paralysis, pneumonia, suicide, poisoning, snakebite, abortion, *mosama*, and *gbe*, while deaths resulting from acute abdominal disease, yaws, and *himbi* were only reported by Ndele Aka informants. Cultural-ecological factors may explain some of this variation. The Bagandu area is twice as densely populated by farmers and Aka as the Ndele area, is considerably closer to the urban areas of Bangui and Mbai, and more of the forest has been cleared away in the Bagandu area than in Ndele. From the center of Ndele one can be in the forest within 5 minutes, while in Bagandu it takes 1 or 2 hours to walk through the plantations before entering the uninterrupted forest. These cultural-ecological factors probably put the Bagandu Aka at greater risk for malaria, schistosomiasis, smallpox, pneumonia, measles, and poliomyelitis. Another factor that may put Bagandu Aka at greater risk for these diseases is their pattern of movement into the village. The Bagandu Aka come out of the forest during the dry season, approximately December to February, to help local villagers with their coffee plantations, while the Ndele Aka come out of the forest during the rainy season, approximately July to October, when net-hunting is most difficult (the nets tear easily once wet). When Bagandu Aka "come to town" in the dry season, they increase the population density considerably at a time when water levels are low, water is more prone to stagnation, and the village is not as clean overall since there are fewer rains to wash away debris. Higher population density at a time when there are fewer clean water resources and the proximity to "the city" increase Bagandu Aka risk for some of the aforementioned communicable diseases.

A study of the approximate dates of death was also undertaken, but the data provided few patterns. Only measles and smallpox occurred relatively recently (smallpox in the late 1960s, measles first reported in 1978). No clear sequence of introduction or diffusion was evident for the other causes of death.

3.4. Aka Death Etiology and Aka Culture

Table 3.1 is more than a quantitative account of Aka death etiology; it also provides some useful information about the Aka culture. Overall, the

Table 3.5 Comparison of Causes of Death in "Primitive" Populations

	Population					
	!Kung ^a	Semai ^b	Yanomamo 1 ^c	Yanomamo 2 ^d	Aka ^e	
Total number of deaths	342	301	559	59	669	
Percentage male	58	56	56	50	60	
Percentage female	42	44	44	50	40	
Percentage children	84	68	?	62	46	
Percentage adult	12	32	?	38	54	
Percentage of deaths with unknown causes	?	40	?	6	21	
Total number of types of causes of death	?	10	17	12	40	
Number of "Western" categories for analyses	3	0	0	4	9	

^a Howell (1979).^b Fix (1977).^c Chagnon (1974).^d Melancon (1982), based on Chagnon data between 1970 and 1974.^e This chapter

Aka medical system is extensive and in agreement with the naturalistic cosmology of the people. Aka death etiology seems to be more extensive than those indicated in similar studies of causes of death in other so-called primitive populations. Evans-Pritchard (1937:479) states "Azande attribute sickness, whatever its nature, to witchcraft and sorcery," while Howell (1979:48) states, "The single largest cause of death elicited from !Kung informants was '*//ganwa* [god] killed him' or 'Heaven ate him' . . ." Chagnon (1974:160) lists 17 causes of death for the Yanomamo, while Fix (1977:60) lists 10 causes of death for the Semai (see Table 3.5). By comparison, the Aka provided more than 40 causes of death.

Comparison of the Aka data with causes of death studies of other primitive populations is fraught with difficulty since methodology to collect data, the data bases, and the methods of analyses vary. Table 3.5 compares some of the studies. Howell's data come from interviewing mothers and fathers about their children that have died, while the Aka

data come from interviewing adults about children, parents, and spouses that have died. This explains, in part, why the !Kung study has a markedly high percentage and the Aka study a lower percentage of child deaths. As every adult has two parents that are likely to be dead, the Aka method would generate more adult deaths than the Howell study. The Semai study is distinct from the others in its high percentage of deaths of unknown origin.

Methods of analysis in these studies also vary. Howell groups the causes of death into three categories for analyses—*infectious and parasitic, degenerative, and violent*, while Melancon utilizes four—he separates “accidental trauma” deaths from violent deaths. The Aka study utilizes nine categories—seven from Preston and two developed independently. Howell places deaths by magic in the violent category, while Melancon puts them in the infectious category. Melancon also arbitrarily places “infant deaths from otherwise unknown causes” in the degenerative category.

A few patterns in these studies of the causes of death do exist: (1) male frequencies are ordinarily higher; (2) infectious and parasitic diseases (includes respiratory, acute, and diarrheal diseases in Aka study) are the principal causes of death in all studies; (3) violent death varies from no cases among the Semai to numerous cases among the Yanomamo to intermediate numbers of cases for the Aka and !Kung; and (4) epidemics seem to be most virulent in the remote tropical basin areas —both Aka and Yanomamo studies cite numerous deaths resulting from epidemics while none are reported for the !Kung or Semai.

Aka death etiology provides evidence for other features of Aka culture: violence, witchcraft, and the hazards of the foraging existence. Examples of death by violence include an Ndele case of homicide where a village male took the life of an Aka man for consistently disobeying work requests of the patron. In one Bagandu case of murder an Aka was killed for not sharing food with others in the camp, and in another instance a conflict about an old French kepi (cap) took three lives. Of the two women who committed suicide, one hung herself after a *palabre* with her husband, while the other hanged herself after the loss of an adult daughter with children.

Accidental deaths reveal the variety of occupational hazards both males and females are confronted with in trying to make a living. It is a male task to collect honey, palm nuts, and palm “wine” from the tops of trees (see Fig. 3.1), and as indicated in Table 3.1 this task involves a considerable risk of death. In hunting accidents, one female and three males died: three males in separate instances were killed by an elephant,



Figure 3.1. Seven Aka males died from falling from trees either in the forest (A) while collecting honey, or in the village collecting palm "wine" (B). (Photographs by B. S. Hewlett.)

while the female was killed by a large duiker's (antelope) horns that gored her abdomen while she was trying to hold the animal down in a hunting net. The child she was pregnant with was born before she died and survived in spite of a large wound in his throat. In accidents related to gathering, one male was crushed to death by the collapse of a termite mound while collecting termites in a tunnel underneath the mound, and one woman died when a tree she was cutting fell on top of her. In other accidents related to the forest life: one male and one female drowned, one from a capsized villager's canoe, and the other crossing a liana bridge; and two women died when a tree fell on their forest home.

Death attributed to witchcraft is another feature of Aka culture indicated in the death etiology. Most Aka believe in witchcraft at some level, yet there is remarkable variation in the degree to which individuals feel it influences their life. As seen in Table 3.3, adults are more susceptible than children to death by witchcraft.

Lastly, the Aka response to an epidemic of measles reiterates a feature of Pygmy culture that Turnbull portrays so well—the people's intimate relationship with the forest (see for instance Chap. 7, this volume). At the height of the epidemic, from January to March 1979, camps in both Ndele and Bagandu moved from the village to locations far into the forest. They remained in the forest for more than a year, often ignoring the wishes of their patrons to return to the village at the traditional time. Forest life physically and emotionally returned their vitality. Unfortunately, some families and camps were unable to move into the forest because so many of its members were ill or had died. Aka nutrition is considerably better in the forest because hunting for protein-rich game meat occurs regularly, while in the village camp Aka depend largely upon the starchy village diet of manioc and plantains.

3.5. Conclusion

From a Western medical perspective, the data identify specific medical problems and needs of contemporary Aka. The data indicate prevalence, incidence, and intensity of certain diseases and illnesses by age, sex, ethnic group, and locality. From an ethnomedical perspective the data indicate the Aka death classification system is quite extensive and naturalistic for the most part, in comparison to that of other "primitive" populations.

The Aka data fit well with the epidemiological model proposed by Dunn (1968) for hunter-gatherers in general, in which malnutrition and starvation are rare, accidental and traumatic deaths vary with different foraging groups (relatively low for Aka), chronic diseases are infrequent, predation is a minor cause of death, and the prevalence of parasitic and infectious diseases are great, especially in a tropical forest ecology. An exception to Dunn's model is found in the incidence of "social mortality," i.e., cannibalism, infanticide, sacrifice, homicide, etc.; he suggests a high incidence for hunter-gatherers, yet among Aka today it is relatively low (unless witchcraft is included).

The epidemiological factors of current Aka mortality are complex. As Aka slowly become sedentary and take up subsistence farming they come into more frequent contact with endemic diseases associated with the village life (e.g., certain parasitic and infectious diseases), and at the same time are also confronted with the devastating diseases of colonization: measles, venereal disease, and certain viral infections. Fortunately, for the present, heart disease, hypertension (see Part II of this volume), and

other chronic diseases are absent among the Aka. With more sedentarization, and changes in diet and exercise patterns, however, the Aka life span may increase, and consequently these chronic diseases may eventually emerge among the forest people.

