

Kuru

- I. Kuru: a progressive, fatal degeneration of brain tissue, marked first by unsteadiness of gait and stance, later by tremor and slurring of speech, loss of coordination, outbursts of laughter, exaggerated startle response, rigidity of limbs, and in late stages inability to stand or sit up, speak, or swallow. Death usually occurs within a year of initial onset of symptoms.
 - A. Kuru was found in one area of eastern Papua New Guinea, mostly among speakers of Fore but also among some neighboring language groups to the north and west. Total population of the kuru region was about 40,000, but in the early 60s the disease was most prevalent among the ~8,000 South Fore.
 - B. In the early 60s about 1% of the affected population was dying of kuru each year. Females were far more likely to get kuru than males. Among males only old men and adolescent/young adults got the disease, while females of all ages got it (though often the first symptoms were seen shortly after birth of a child). In the early 60s, fewer than 10% of females survived past child-bearing age, while males had only a 20% chance of dying of the disease.
 - C. Speculation about the cause of the disease began in the mid-50s, including: hysteria (the first diagnosis), bacterial infection, a food or environmental toxin, heredity.
- II. Medical research began in the late 50s, with D. Carleton Gadjusek of the United States National Institute of Health, Vincent Zigas of the PNG Dept. of Health, Michael Alpers, and assorted other public health and medical specialists. Due to the localization of the disease in a “primitive” tribe, anthropologists were also seen as being an important source of information about the disease. For example, the Australian anthropologists Ronald and Catherine Berndt had studied the North Fore and kuru in the early-mid 50s.
- III. The anthropologists Robert Glasse and Shirley Glasse (later Lindenbaum) received Rockefeller Foundation support to conduct genealogical research among the Fore.
 - A. The Glasses general plan was to carry out a in-depth study of social life and culture of several adjacent residential groups (“parishes”) among the South Fore, and then to check their findings by ranging widely through Fore territory as well as in the neighboring language groups to the north and west where kuru was also found.
 - B. As their fieldwork progressed, the Glasses found that the disease was apparently of recent origin.
 1. Older informants often spontaneously referred to the first appearance of kuru in their area, something they said had happened in their lifetime.
 2. By estimating the age of informants, recording the order of births, initiations, and marriages, and tying these to datable events like the crash of a Japanese airplane during WWII, the Glasses compiled a history of the disease among the Fore. The disease first appeared among the Fore between 1900 and 1920, spreading gradually south and west, reaching some areas only in the 30s and 40s.
 - C. If kuru is that recent, it is unlikely to be a hereditary disease. **Why?**
 1. It is spread throughout a population of 40,000, and they cannot all be descended from a single individual 60 years earlier.
 2. A hereditary disease this fatal can only persist in a population if it is a balanced polymorphism, in which both homozygotic states are selected against but the heterozygotic state is advantageous. For kuru, there was no known alternative homozygotic or heterozygotic state, but additional genealogical information was needed before a hereditary origin could be ruled out (or demonstrated).
- IV. The Glasses noted that Fore say they began eating their dead relatives (endocannibalism) around the turn of the century. This put the adoption of cannibalism about 10 years before the first appearance of kuru. While

in the field, the Glasses read an article in Time magazine describing a (now famous) experiment in which flatworms (*Planaria*) were trained, cut up, and fed to other flatworms. The ‘cannibal’ flatworms retained some of the memory of the worms they ate. Combined with their data, this “cannibalism can affect the brain” idea led the Glasses to wonder whether kuru and cannibalism were connected.

Hypothesis: The kuru disease is caused by a biological agent transmitted by cannibalism.

- V. With this working hypothesis, the Glasses began systematically collecting information about cannibalism among the Fore.
- A. Myth and ritual contained no trace of reference to kuru, which was striking given the severity of the crisis that the disease was creating among the Fore. Like kuru, cannibalism was first practiced in North Fore and then spread southwards. Cannibalism was also practiced by the other language groups to the north and west where kuru was also present.
 - B. Among the Fore, human flesh was regarded simply as another form of meat, similar to meats like insects, frogs, and other small game. These were all forms of meat appropriate for women, while men preferred to eat domestic pigs or wild boar. After a person’s death, the maternal kin of the deceased dismembered the corpse, removing hands and feet, cutting open the arms and legs to strip out the muscles. The chest and belly were cut open and organs removed, care being taken not to rupture the gall bladder which contains extremely bitter fluids that would spoil the meat. After severing the head, the skull was broken open to remove the brain. Meat, viscera, and brain were all eaten. Bones were broken and marrow sucked out, the pulverized bones were then cooked and eaten with green vegetables. Typical cooking techniques heated the meat no higher than 90-95 °C, and not for very long at that.
 - C. Not all body parts were eaten by everyone
 1. Buttocks of Fore men were reserved for their wives
 2. Female maternal cousins got the arms and legs
 3. In South Fore, a man’s brain could be eaten by his sister. A woman’s brain was given to her son’s wife or her brother’s wife
 4. Children under the age of 10 live with their mothers and ate whatever was given to them. After about age 10, male children moved to the men’s house and thereafter ate the same foods as adult males.
 5. Though more common in North Fore, in South Fore most adult males did not eat human meat. Those adult males who did were mostly old men. And males said they never ate the meat of females.
 - D. The Australian government suppressed cannibalism in North Fore in the early 50s, but the practice lingered in South Fore until mid-late 50s. Thus, the South Fore people who the Glasses were studying in 1961-63 had ceased eating their relatives about 5 years earlier.
- VI. The Glasses proposed to the medical researchers that kuru was transmitted through cannibalism. Initially, most of the medical researchers thought this was preposterous, though this attitude changed as alternative hypotheses became increasingly untenable and the Glasses’ data on the patterns of cannibalism became increasingly clearly related to the patterns of kuru. Eventually, Gadjusek’s research team demonstrated transmission of a kuru-like disease (a simian encephalopathy) via cannibalism in chimpanzees, and Gadjusek was later awarded a Nobel prize for having “discovered” the cause of this class of disease (which includes “mad cow disease,” scrapie in sheep, and Creutzfeldt-Jacob disease in humans)

Source:

Lindenbaum, Shirley

1979 *Kuru Sorcery: Disease and Danger in the New Guinea Highlands*. Mayfield Publishing, Palo Alto, CA.