Abstract

Dr. Mary Putnam Jacobi's Theory of the Origin of Menstruation: Resistance to Gender Bias in Scientific Knowledge in Late Nineteenth-century America

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This thesis examines gender bias in scientific knowledge focusing on the dispute about menstruation and women's higher and medical education in late nineteenth-century America. It explores the evolution of a new theory of the origin of menstruation, presented by Mary Putnam Jacobi, M. D. in resistance to previous gender-biased modes of thought.

Regarding the expansion of women's higher and medical education, there was a debate based on the scientific explanation of menstruation that addressed how to educate women without aggravating their health. *Sex in Education* (1873), by Edward H. Clarke, M. D., fueled the debate, stating that young women needed rest during menstruation for "scientific" reasons. Jacobi refuted this argument in *The Question of Rest for Women during Menstruation* (1877). I analyze this debate on the basis of feminist science studies as well as discuss the problem of gender-biased interpretations and the relationship between scientific knowledge and social situations.

Chapter 1 reviews the previous historical studies of menstruation from perspectives related to gender as well as Jacobi's argument on the theory of the origin of menstruation. It acknowledges that certain historians of women's higher education and medicine have dealt with this debate; however, the argument presented in this chapter has not been examined in the framework of the scientific knowledge of the late nineteenth century. Therefore, it needs to be considered taking into account the history of nutrition.

Chapter 2 deals with the following: the historical background of the dispute surrounding women's medical education in America, Jacobi's biography, and her thoughts on medicine and gender. In late nineteenth-century America, private medical schools had an oversupply of doctors. Newly emerged female doctors spurred the oversupply, and male doctors needed justification for checking their growth. Amidst such gender tensions, Jacobi became the first woman student to matriculate into the authoritative École de Médecine in Paris. After returning to America, she energetically led female doctors and defied the essentialism of sexual division of labor in medicine.

Chapter 3 discusses the primary views on menstruation at the time as well as Clarke's argument on menstruation and rest. With the advent of the theory of spontaneous ovulation,

menstruation went from being regarded as the quiet elimination of surplus humor to the equivalent of the rut of lower mammals, or a type of disease. Furthermore, a characteristic of Clarke's argument was that menstruation is an essential elimination of waste from the reproductive organs, and thus girls must rest during menstruation to ensure that their reproductive system is soundly repaired after the elimination. In addition, I indicate that Clarke's argument selectively employed the organic chemist Justus von Liebig's theory of nutrition.

Chapter 4 addresses the arguments against Clarke's idea. Proponents of women's higher education criticized Clarke's assertive attribution of the deterioration of women's health to higher education. The Association of Collegiate Alumnae investigated the health of 705 women college graduates and released *The Health Statistics of Women College Graduates* (1885). It mounted an effective counterattack by revealing that nearly 80 percent of women college graduates were healthy.

Chapter 5 considers Jacobi's theory of the origin of menstruation. Jacobi conducted a questionnaire survey, answered by 268 women, to investigate menstrual health. She found that nearly half of them did not suffer during menstruation and criticized that mainstream theories of the origins of menstruation that regarded it as rut had been already counterexemplified by some autopsies. In addition, Jacobi hypothesized that women could accumulate nutrients for reproduction. She investigated this hypothesis through experiments that analyzed the urea in the urine of six women as well as examined their body temperature, pulse, and muscular force. She found that these values changed rhythmically during the menstrual cycle. In the nineteenth century, Liebig proposed that urea was a measure of energy consumption; however, this inference was rebuffed by other scientists' experiments. Jacobi considered urea to be a measure of acceleration in the bloodstream because of women's nutrient-accumulating character. Therefore, she concluded that women do not require rest during menstruation if their nutrition is normal.

The final chapter outlines the conclusion and significance of this study and indicates future tasks. This study is significant in that it clearly conveys the gender bias in scientific knowledge in late nineteenth-century America as well as interprets Jacobi's questionnaire study and experiment on the basis of feminist science studies.