

WORKSHEET FOR KS3 AND GCSE HISTORY

Helen Mackay (1891-1965)

Helen Mackay worked at the Mothers' Hospital from 1920 to 1959. She did much to encourage the acceptance of women into the male-dominated medical world. Through her important work she provided inspiration to a generation of female paediatricians.

Who was Helen Mackay?

Helen Mackay was born on 23 May 1891 in Inverness, Scotland. In 1914 she qualified as a doctor after studying at the London School of Medicine for Women at the Royal Free Hospital in the early 1910s. This was the only place that women could train to become doctors. In the early 1920s she became the first female house physician and surgeon at the Queen Elizabeth's Hospital for Children in Hackney Road. For nearly 40 years she worked at the Mothers' Hospital becoming one of the first female consultants in any speciality. In 1926 she became the Physician-in-Charge of Neo-Nates, and she was also the first Honorary paediatrician at the Mothers'. In addition to these posts, she was also consultant paediatrician at Hackney Hospital (the first person to hold this post), and in 1934, she became the first woman to be elected as a fellow of the Royal College of Physicians. Among many honours given to her throughout her career, in 1945, she was one of the first five female doctors to join the British Paediatric Association.

What were her medical achievements?

While at the Mothers' Mackay did pioneering research into rickets and infantile anaemia. Both childhood diseases were strongly associated with poverty, which is something that she would have witnessed in Hackney.

Rickets

Rickets is caused by a deficiency of calcium in the bone, which is caused by inadequate levels of calcium and Vitamin D in the diet, and by inadequate exposure to sunlight, which the body needs in order to absorb Vitamin D. Rickets causes children's bones to soften, causing bending of the spine, bowing of the legs, and malformations of the jaw, which become permanent once the child has finished growing. Rickets was a very common condition in the early 20th century, especially amongst poor urban children who, as well as having inadequate diets, were often deprived of sunlight while they worked long shifts in enclosed factories, returning home to overcrowded and polluted streets. Once the link with sunlight deprivation had been discovered, charitable organisations began to organise trips for such urban children to the countryside in the summer. It is an indication of dietary improvement over the last generation or two that the deformities of rickets, still common well within living memory, are no longer seen in Hackney. Mackay's groundbreaking research established the link between diet and rickets, and led to a new understanding of its prevention and cure. She showed that cod liver oil and sunlight were effective treatments for the disease.

Anaemia

Anaemia is a very serious health problem if left untreated among children. Chronic anaemia can cause serious neurological and developmental damage, as well as other symptoms like extreme tiredness, poor concentration and behavioural problems. Mackay was aware of the frequent occurrence of anaemia among newborn babies and she wanted to understand how it was caused. Her work did three extremely important things: it showed conclusively that iron deficiency was the most common cause, it illustrated how it affected children, and it led to a new awareness about how it could be prevented.

She studied her infant patients at the Mothers' between 1925 and 1927. She found the condition to be very widespread, with the vast majority of children in the East End being deficient in iron. As part of her research she established what were the normal haemoglobin levels for different stages of infant development, which had not been done before. After studying the haemoglobin levels of breastfed and bottle-fed babies she concluded that breast milk lessened iron deficiency. She found that while 50% of the iron in human breast milk was absorbed by the infant, only 10% of the iron in cow's milk was. She concluded that babies who were not being breastfed should be given supplementary iron, and this is still received wisdom today.

How did Mackay change medicine in Britain?

At the Mothers' she prepared an iron sulphate preparation, which the staff dubbed "Mist Helen Mackay", and she urged that it should be given to all children suspected of iron deficiency anaemia. More than 70 years after her studies were conducted, EU legislation dictates that all manufacturers of infant formula milk must add supplementary iron to their products.

Her research was groundbreaking and transformed the understanding of how rickets and anaemia are linked to dietary deficiency. The results of her studies were published in two reports: *Anaemia in Infancy: its Prevalence and Prevention* (Ministry of Health, 1928), and *Nutritional Anaemia in Infancy with Specific Reference to Iron Deficiency* (Ministry of Health, 1931). In the 1960s, her definition of infantile anaemia was used by the World Health Organisation. She also emphasised the importance of good nutrition in childhood, and stated that "even the poorest mothers, if they realised what sort of diet they should aim at, could achieve wonders". She believed a healthy diet for a children aged 1 to 5 years should include a pint of milk, some meat, fish or eggs, and some fresh fruit. She also thought that children should be exposed to as much sunlight and air as possible.

Questions

What research did Helen Mackay conduct at the Mothers' Hospital?

What were the reasons for rickets and anaemia among children?

How was her research important?

**In your opinion how important is Helen Mackay in the History of Medicine?
Explain your answer.**