**What causes disease?**

Diseases are a cause of ill health.

Draw pictures of some things that you think can cause disease.

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| **Things that can cause disease** |

*Biology > Big idea BHD: Health and disease > Topic BHD1: What are health and disease? > Key concept BHD1.2: Disease*

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| **Diagnostic question** |
| **What causes disease?** |

**Overview**

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| Learning focus: | The good health of organisms can be compromised by infectious and non-infectious diseases, which can be caused by germs, lifestyle, environment, or information in the genome. |
| Observable learning outcome: | Recall that diseases can be caused by germs, lifestyle, environment or information in the genome. |
| Question type: | Drawing |
| Key words: | Health, disease |

**What does the research say?**

When children aged 14-15 in Turkey were asked to draw and write about disease, the major themes in their answers were names of specific diseases (most commonly measles, followed by flu, cold and cancer), causes of disease (most commonly microbes [58% of answers in which a cause was mentioned], malnutrition [15%], cigarettes and alcohol [11%] and dirty environment [9%]), consequences of disease (most commonly fatigue, being sick, death and pain) (Isik, Çetin and Özarslan, 2017). Similar results were observed when children aged 8-11 in Hungary were asked to draw and write about causes of disease (Piko and Bak, 2006). One student out of 81 in the Turkish study drew a “faded flower” that was said to be “sick”; all other answers pertained to humans. Ideas about mental health did not appear in the children’s drawings, but did appear in 17% of written answers.

There is evidence that children up to age 11 appreciate that environmental factors, which are not germs, can cause ill health. The most commonly cited factors were pollen, exhaust fumes from vehicles, and smoke from cigarettes (passive smoking); other factors mentioned included dust, “air pollution”, factories, rubbish dumps, and “polluted water” (Woods et al., 2005; Pluhar et al., 2009).

Asking children to draw, discuss and write is an established technique for probing their understanding of health and disease, which has been said to enhance participation by children; the drawing aspect in particular enables children to convey personal preferences and concepts that may be beyond their current vocabulary (Wetton and McWhirter, 1998; Backett-Milburn and McKie, 1999; Harrison, 2002).

**Ways to use this question**

Students should complete the drawing tasks individually (the drawings will be discussed in small groups in the response activity ‘What would happen if…’). To reduce sensitivities when the drawings are shared, students could be told **not** to put their names on their drawings.

*Differentiation*

In some cases it may be helpful to prompt students to think about things that they have been told not to do (by parents/teachers/TV/books) because they might cause them to get a disease or to get “sick”.

**Equipment**

For each student:

* pencils, pens or crayons
* paper (if not drawing on the student worksheet)

**Expected answers**

There is likely to be a wide range of depictions, but in the study by Isik, Çetin and Özarslan (2017) most drawings on the theme of ‘causes of disease’ related to microbes. Fewer drawings related to diet or malnutrition, cigarettes or alcohol, or dirty environment. It was not reported that any drawings depicted genes or the genome as a cause of disease.

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| *Example 1: A boy with fever. “Illness is the result of germs and bacteria getting into the body somehow” (from Isik, Çetin and Özarslan, 2017)* | |
| *Example 2: A girl with measles. The text refers to “catching an infection” and “when you eat unhealthy food” as causes of disease (from Isik, Çetin and Özarslan, 2017)* | |
|  |  |
| *Example 3: Transmission of bacteria from a person who is ill, and air pollution from road vehicles (from Piko and Bak, 2006)* | *Example 4: Dirty environment. “Dirty tree, garbage, garbage, garbage” (from Isik, Çetin and Özarslan, 2017)* |

**How to respond - what next?**

Asking children to draw, discuss and write is an established technique for probing their understanding of health and disease (Wetton and McWhirter, 1998; Harrison, 2002). Thus, the drawings that students have produced could be used as the basis for small group discussions, which give students the opportunity to explore their thinking and encourage social construction of new ideas (meaning making) through dialogue.

The following BEST ‘response activity’ describes just such a small group discussion activity and could be used in follow-up to this diagnostic question:

* Response activity: What would happen if…

**Acknowledgments**

Developed by Alistair Moore (UYSEG), from techniques described by Wetton and McWhirter (1998), Harrison (2002), Isik, Çetin and Özarslan (2017), and Piko and Bak (2006).

Images: hand holding pencil - pixabay.com/HeatherPaque (1515895)

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