**USDA’s Nutrition Evidence Library’s**

**Research Studies Grade Classification Chart**

Examples Developed by the Department of Nutrition, Dietetics, and Food Science, Brigham Young University, 2015

*USDA’s Nutrition Evidence Library* grades each research article presented on their website, providing readers with a system to judge the rigor of the study design used in the published article. The scoring system ranges from “A” – the highest grade – to “D” – the lowest grade:

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| --- | --- |
| **Grade** | **Type(s) of Study\*** |
| A | Controlled Clinical Trial or Randomized Controlled Trial  Laboratory Study  Intervention study with treatment and control groups |
| B | Epidemiological Study (highest rigor). Types:   * Cohort study |
| C | Epidemiological Study (moderate rigor) Types:   * Case-control study |
| D | Epidemiological Studies (lowest rigor) Types:   * Cross-sectional study * Observational (Descriptive) study * Case Study * Intervention study with pre-post test data but no control group (before and after study) |

\*Definitions of Types of Studies:

**Controlled clinical trial:** a study design in which health outcomes related to a treatment or condition given to one group of subjects is compared to another group receiving a placebo or other intervention. The best designed controlled clinical trial includes double-blinding, meaning the researchers and subjects do not know if they belong to the treatment or control group. For example, providing 50 healthy men (45+ years old) with either a 5 mL/d fish oil supplement (treatment) or a placebo for 12 weeks and comparing health disease risk factors (e.g., blood cholesterol) between the treatment and control groups.

**Laboratory study:** a study design in which an experimental group receives a treatment or condition in a highly controlled laboratory environment and measurements taken from subjects are compared to a control group. Laboratory studies often use animal models. For example, 50 adult male rats were given either a diet with 60% (treatment) or 10% of calories (control) coming from fat, with researchers examining aspects of cellular respiration between the two groups.

**Intervention study with treatment and control groups:** a study design in which a treatment group receives a designed health intervention and measurements taken from subjects before and after the intervention are compared to a control group who do not receive the intervention. For example, beverage intake of college students at Brigham Young University could be measured before and after an intervention in which prices of healthier beverage options (e.g., milk, water, 100% juice) in vending machines were reduced by 50% (treatment group) and compared to college students at Utah Valley University in which the intervention was not implemented (control group).

**Cohort study:** a study design in which groups of people are followed over time to monitor development of disease or health condition. For example, measuring dairy food consumption, calcium-Vitamin D supplement use, and caffeine intake of older female adults (+65 years) in Utah County in 2013 and monitoring development of osteoporosis over the next 5 years (2018).

**Case-control study:** a retrospective study design in which persons with a known disease (cases) are compared to similar people without the disease (controls). Both case and control subjects will be asked about behaviors or events in the past that may offer explanation for cases developing the known disease. For example, comparisons of answers to survey questions about previous red meat and dairy food consumption are made between a group of men (50+ years) in Utah County who have been diagnosed with colorectal cancer (cases) and a group of men (50+ years) in Utah County without colorectal cancer (controls), to determine if these dietary behaviors are related to colorectal cancer.

**Cross-sectional study:** a study design that measures behaviors or events and health outcomes at one point in time. For example, a group of homeless youth (9-13 years old) answers survey questions about food access at home and the number of fruits and vegetables they consumed on the previous day.

**Observational (Descriptive):** a study in which individuals are observed or certain outcomes are measured. No attempt is made to affect the outcome (i.e. no treatment is given). One example is measuring vitamin C retention in canned foods that have been stored for a year. Another example is determining the number of children in Utah County who are participating in school breakfast programs and the socio-economic status of the participants’ households.

**Case study:** a study design that documents a unique condition or event observed in a patient/client (case) by a health professional. Case studies often prompt researchers to use a more rigorous study design in the future to further study the observed phenomenon. For example, a researcher could publish a study on the hydration and nutrient status of an Olympic athlete who swims 80,000 meters (or almost 50 miles) per week.

**Intervention study with pre-post test data but no control group (before and after study):** a study design in which measurements are taken from subjects before and after a designed health intervention and are not compared to a control group. For example, the sales of beverages at Brigham Young University were measured before and after an intervention in which prices of healthier beverage options (e.g., milk, water, 100% juice) in vending machines were reduced by 50% compared to baseline.