Hwb Gwyddorau Bywyd Cymru
Life Sciences Hub Wales

Understanding Study Designs

A study design is a structured plan used to collect, analyse, and interpret data to answer a specific research question. In health and social care research, selecting the right study design is crucial to ensuring your research is ethical, reliable, effective, and aligned with your objectives.

This guide summarises key study designs and important terms used in health and social care research, helping you plan effectively and support the successful development and implementation of your innovation.

Study	Definition
Pilot	A pilot study is a small-scale, preliminary version of a larger study. It is conducted to test the feasibility, design, methods, and tools before committing to a full-scale project.
Pre-clinical Trial	A pre-clinical trial is carried out before a drug , treatment, device etc. is tested in humans. It aims to evaluate the treatment's safety, effectiveness, and biological activity through laboratory (*in vitro*) and animal (*in vivo*) studies.
Clinical Trials	A clinical trial is a research study conducted with human participants over four phases to evaluate the safety, effectiveness, and side effects of new medical treatments, drugs, vaccines, or procedures, often comparing treatment groups under strict ethical guidelines.
Analytical	Research that investigates relationships between variables to understand causes, effects, or associations. They aim to explain why something happens. They often compare groups, such as exposed vs. unexposed individuals, and use statistical methods to test hypotheses.
Descriptive	Descriptive studies describe the characteristics, patterns, or trends within a population. They do not test hypotheses or examine cause and effect but provide valuable insights into the "what" of a health issue.
Experimental	An experimental study is research where the investigator introduces a treatment or condition to one group and compares the outcomes with a control group. This helps determine cause-and-effect relationships.
Validation	A validation study assesses the accuracy, reliability, and usefulness of a tool or method. It confirms that the instrument measures what it is intended to, consistently and correctly.
Effectiveness	An effectiveness study evaluates how well a treatment, intervention, or programme works in real-world conditions outside of controlled experimental settings.
Qualitative	Qualitative research explores people's experiences, feelings, behaviours, and social contexts using non-numerical data. It aims to understand the reasons and meanings behind a phenomenon.
Quantitative	Quantitative research involves collecting and analysing numerical data to identify patterns, relationships, or test hypotheses. It focuses on objective measurement and uses statistics to draw conclusions.
Case Study	A detailed examination of a single person, group, event, or situation. It explores complex issues in real-life context using multiple data sources such as interviews, and observations.
Cohort	A cohort study follows a group, with a shared characteristic, over time to observe outcomes and compare those exposed to a factor with those not exposed.
Meta-analysis	Meta-analysis combines results from multiple studies on the same topic using statistics to provide a more precise and reliable overall estimate.
Economic Evaluations	An economic evaluation compares the costs and outcomes of two or more healthcare interventions to determine which offers the best value for money, helping decision-makers allocate resources efficiently.
Longitudinal Studies	A longitudinal study repeatedly observes the same subjects over time to track changes and understand how variables develop and relate to outcomes. It is often used to assess the long-term impact of innovations.