

# ONLINE APPLICATIONS – SUGGESTED STUDY METHODOLOGY OPTIONS

| Main class                                                                                                                                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|                                                                                                                                           | Type                               | Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Quantitative study</b><br><br>Grimes DA, Schulz KF. An overview of clinical research: the lay of the land. Lancet 2002;359(9300):57-61 | <b>Interventional/experimental</b> | Nature of intervention: Category 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Novel/new medicines/drugs and intravenous fluids and blood products, vaccines, radio-active or biohazardous materials, medical devices, experimental surgical procedures.                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                                           |                                    | Nature of intervention: Category 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Approved and registered medicines/drugs and intravenous fluids and blood products, vaccines, radio-active or biohazardous materials, medical devices, surgical procedures                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                                           |                                    | Nature of intervention: Category 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Fortified or enriched foods and nutritional products, feeds and formulas, including breastmilk and breastmilk substitutes, macro-and micronutrients, pre- and probiotics, herbs, bioactive non-nutrients (e.g. dietary fibre, phenolic acids, flavonoids, carotenoids), diets and dietary patterns, and other related nutritional products                                                                                                                                                                      |
|                                                                                                                                           |                                    | Nature of intervention: Category 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Education, health promotion, mental health strategies, physical activity and other lifestyle related interventions, rehabilitative interventions (e.g. care after stroke, accidents, etc.), health systems and implementation strategies                                                                                                                                                                                                                                                                        |
|                                                                                                                                           |                                    | Nature of intervention: Category 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Other                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                                                                                           |                                    | <b>Design</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Brief description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                                                           | <b>Randomised controlled trial</b> | Purpose: estimating the effectiveness or efficacy of an intervention(s)<br><br>Methods: randomly assigns participants (or clusters of participants) into at least one experimental and at least one control (e.g. standard care, placebo, a different experimental intervention) group. Randomisation aims to distribute known and unknown confounding factors equally across groups. As the study is conducted, the only expected difference between the groups is the actual experimental or control intervention, thus the difference in | <b>Source/Resources</b><br><br>Akobeng AK. Understanding randomised controlled trials Arch Dis Child 2005; 90:840–44.<br><br>Schulz KF, Grimes DA. Generation of allocation sequences in randomised trials: chance, not choice. Lancet 2002;359(9305):515-9<br><br>Schulz KF, Grimes DA. Allocation concealment in randomised trials: defending against deciphering. Lancet 2002;359(9306):614-8<br><br>Schulz KF, Grimes DA. Blinding in randomised trials: hiding who got what. Lancet 2002;359(9307):696-700 |

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|  |  |                                 | outcomes across groups can be attributed to the specific intervention received.                                                                                                                                                                                                                                                                                                                                                             | Schulz KF, Grimes DA. Sample size slippages in randomised trials: exclusions and the lost and wayward. Lancet 2002; 359: 781–85.                                                |
|  |  | Non-randomised controlled trial | <p>Purpose: estimating the effectiveness or efficacy of an intervention(s)</p> <p>Methods: similar to that of a randomised controlled trial (as above), but without random allocation of the participants (or clusters of participants) to the intervention and control groups.</p>                                                                                                                                                         | <a href="https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs">https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs</a> |
|  |  | Controlled before-after study   | <p><i>A specific subtype of a non-randomised controlled trial</i></p> <p>A study design that measures the outcome(s) of interest in two different groups of participants, before and after the implementation of an intervention. One group receives the intervention, whilst the other group (the control group) does not receive the intervention during the trial (they could receive it after the trial, e.g. a wait-list control).</p> | <a href="https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs">https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs</a> |
|  |  | Uncontrolled before-after study | A study design that measures the outcome(s) of interest before and after the implementation of an intervention, where no control group is present.                                                                                                                                                                                                                                                                                          | <a href="https://emj.bmj.com/content/32/7/507">https://emj.bmj.com/content/32/7/507</a>                                                                                         |
|  |  | Interrupted time series (ITS)   | An interventional study design where data are collected at multiple time points before and after the implementation of an intervention. The main objective of an ITS is to examine whether the data pattern observed post-intervention is different to that observed pre-intervention.                                                                                                                                                      | <a href="https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs">https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs</a> |

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|  | <b>Observational</b><br><br>Grimes DA, Schulz KF Bias and causal associations in observational research. Lancet 2002; 359: 248–52. | <b>Design</b>                            | <b>Brief description</b>                                                                                                                                                                                                                                                                                                                                         | <b>Source/Resources</b>                                                                                                                                                                                                                                                                                                                                                                               |
|  |                                                                                                                                    | <b>Prospective cohort</b>                | A study in which a defined group of people (the cohort) is followed over time, to examine associations between different exposures received and subsequent outcomes. A ‘prospective’ cohort study recruits participants before any exposure and follows them into the future in order to determine outcomes.                                                     | Grimes DA, Schulz KF. Cohort studies: marching towards outcomes. Lancet, January 2002; 359: 341-5. Grimes DA, Schulz KF. Descriptive studies: what they can and cannot do. Lancet 2002;359(9301):145-9                                                                                                                                                                                                |
|  |                                                                                                                                    | <b>Retrospective cohort</b>              | A study in which a defined group of people (the cohort) is followed over time, to examine associations between different exposures received and subsequent outcomes.<br>A ‘retrospective’ cohort study identifies subjects from past records describing the exposures and follows them from the time of those records forward in time to determine the outcomes. | Grimes DA, Schulz KF. Cohort studies: marching towards outcomes. Lancet, January 2002; 359: 341-5. Grimes DA, Schulz KF. Descriptive studies: what they can and cannot do. Lancet 2002;359(9301):145-9                                                                                                                                                                                                |
|  |                                                                                                                                    | <b>Case-control</b>                      | A study that compares people with a specific outcome of interest (‘cases’) with people from the same source population but without that outcome (‘controls’), to examine the association between the outcome and prior exposure (e.g. having an intervention). This is a retrospective study that is particularly useful when the outcome is rare.               | <a href="https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs">https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs</a><br><br>Schulz KF, Grimes DA. Case-control studies: research in reverse. Lancet, February 2002; 359: 431-4. Grimes DA, Schulz KF Compared to what? Finding controls for case-control studies Lancet 2005; 365: 1429–33 |
|  |                                                                                                                                    | <b>Cross sectional including surveys</b> | A study that collects information on exposures or interventions (past or present) and current health outcomes, for a group of people at a particular point in time, to examine associations between the outcomes and exposure to interventions.                                                                                                                  | <a href="https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs">https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs</a><br><br>Setia MS. Methodology Series Module 3: Cross-sectional Studies. Indian J Dermatol. 2016;61(3):261-264. doi:10.4103/0019-5154.182410                                                                            |

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|  |  |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                     | Grimes DA, Schulz KF. Descriptive studies: what they can and cannot do. Lancet 2002;359(9301):145-9                                                                                                                                                                                                                                          |
|  |  | Diagnostic test accuracy study | <p>Purpose: to estimate the accuracy of a diagnostic test, ideally comparing a novel or new (less invasive) index test to the reference (gold) standard</p> <p>A diagnostic test accuracy study provides evidence on how well a test correctly identifies or rules out disease and informs subsequent decisions about treatment for clinicians, their patients, and healthcare providers.</p>                                       | <p>Mallett S, Halligan S, Thompson M, Collins GS, Altman DG. Interpreting diagnostic accuracy studies for patient care. BMJ. 2012 Jul 2;345:e3999. doi: 10.1136/bmj.e3999. PMID: 22750423.</p> <p>Akobeng AK. Understanding diagnostic tests 1: sensitivity, specificity and predictive values. Acta Paediatrica 2007 Mar; 96(3):338-41.</p> |
|  |  | Ecological study               | <p>Purpose: to study population-level risk factors related to specific outcomes to make large scale comparisons, for example between countries.</p> <p>An ecological study collects and analyses data at the group or population level rather than the individual level. It is efficient for testing correlations in an exploratory manner and generating hypotheses that can be further tested using individual level designs.</p> | <p><a href="https://www.nature.com/articles/6400454.pdf?origin=ppub">https://www.nature.com/articles/6400454.pdf?origin=ppub</a></p> <p><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1615050/pdf/amjph00456-0123.pdf">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1615050/pdf/amjph00456-0123.pdf</a></p>                          |
|  |  | Case report <sup>1</sup>       | Observations are made of one patient with an interesting disease profile, before and after an intervention but with no control group.                                                                                                                                                                                                                                                                                               | <a href="https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs">https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs</a>                                                                                                                                                              |
|  |  | Case series <sup>2</sup>       | Observations are made on a series of individuals, usually all receiving the same or                                                                                                                                                                                                                                                                                                                                                 | <a href="https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs">https://childhoodcancer.cochrane.org/non-randomised-controlled-study-nrs-designs</a>                                                                                                                                                              |

<sup>1</sup> Kindly note that a case report is submitted as such on HREC application system and not under health research application

<sup>2</sup> Kindly note that a case series submitted as such on HREC application system and not under health research application

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|                   |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>similar intervention, before and after an intervention but with no control group. A case series consists only of participants who are sampled on the basis of the presence of a specific outcome (a disease or disease-related outcome).</p>                                                                                                                                                                                                           | <p><a href="https://pubmed.ncbi.nlm.nih.gov/22213493/">https://pubmed.ncbi.nlm.nih.gov/22213493/</a><br/> <a href="https://bmcmedresmethodol.biomedcentral.com/articles/10.1186/s12874-017-0391-8?optIn=false">https://bmcmedresmethodol.biomedcentral.com/articles/10.1186/s12874-017-0391-8?optIn=false</a></p> |
| Qualitative study | Design                      | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Source/Resources                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                   |
|                   | Descriptive/<br>explorative | <p>Purpose: to describe or explore participants' experiences and factors related to certain phenomena, events, or interventions.</p> <p>Method: sources of evidence for descriptive studies include interviews, documentation, archival records, direct observations, participant-observation, and physical artefacts.</p> <p>This study cannot be linked with a study that seeks to develop in-depth understanding through interpretive analysis such as phenomenology, transformative, action, or grounded theory research.</p> | <p>Kim, H., Sefcik, J. S., &amp; Bradway, C. (2017). Characteristics of Qualitative Descriptive Studies: A Systematic Review. <i>Research in nursing &amp; health</i>, 40(1), 23–42. <a href="https://doi.org/10.1002/nur.21768">https://doi.org/10.1002/nur.21768</a></p>                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                   |
|                   | Phenomenological            | <p>Purpose: to explore in depth the conscious human experience. Phenomenological are categorised as either descriptive or interpretive.</p> <p>Method: data is collected in the form of individual interviews with extensive field notes. As much as the participant is relaying their experience the researcher being</p>                                                                                                                                                                                                        | <p>Groenewald, T. (2004). A Phenomenological Research Design Illustrated. <i>International Journal of Qualitative Methods</i>, 42–55.<br/> <a href="https://doi.org/10.1177/160940690400300104">https://doi.org/10.1177/160940690400300104</a><br/> Reiners GM (2012) Understanding the Differences between Husserl's (Descriptive) and Heidegger's (Interpretive) Phenomenological Research. <i>J Nurs Care</i> 1:119. doi:10.4172/2167-1168.1000119</p> |                                                                                                                                                                                                                                                                                                                   |

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|  |                 | present also influences the story that is told. Therefore, it is important for the research to keep detailed field notes and reflections of their experience.                                                                                                                                                                                                                                                      | Gill, M 2014, 'The Possibilities of Phenomenology for Organizational Research', Organizational Research Methods, vol. 17, no. 2, pp. 118-137 .<br><a href="https://doi.org/10.1177/1094428113518348">https://doi.org/10.1177/1094428113518348</a>                                                                              |
|  | Case study      | Purpose: to describe the in-depth experience of one person, family, group, community, or institution in-depth.<br><br>Method: sources of evidence for case studies include interviews, documentation, archival records, direct observations, participant-observation, and physical artefacts. One of the most important sources for data in qualitative case study research is the interview (Alpi & Evans, 2019). | Mureithi, L., Burnett, J.M., Bertscher, A. et al. (2018). Emergence of three general practitioner contracting-in models in South Africa: a qualitative multi-case study. International Journal of Equity Health, 17(107).<br><a href="https://doi.org/10.1186/s12939-018-0830-0">https://doi.org/10.1186/s12939-018-0830-0</a> |
|  | Grounded theory | Purpose: to ground or evolve a theory from the data that is collected.<br><br>Method: the researcher conducts interviews, finds multiple sources of data, may include documents, and will go back to participants for additional follow up questions. As the theory develops, more data will be collected to contribute to the evolving theory.                                                                    | Sbaraini, A., Carter, S.M., Evans, R.W. et al. (2011). How to do a grounded theory study: a worked example of a study of dental practices. BMC Medical Research Methodology, 11(128).<br><a href="https://doi.org/10.1186/1471-2288-11-128">https://doi.org/10.1186/1471-2288-11-128</a> .                                     |
|  | Ethnography     | Purpose: to provide a rich, detailed account of the experience of one person, family, group, community, or institution in-depth.                                                                                                                                                                                                                                                                                   | Fudge, N., Wolfe, C. D., & McKeivitt, C. (2008). Assessing the promise of user involvement in health service development: ethnographic study. BMJ                                                                                                                                                                              |

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|  |                                                                | <p>Method: the ethnographer does interviews and makes field notes of behaviour that he/she is interested in. The interviewer will immerse themselves in the context and make observations, usually writing reflection notes in a journal to document their experience.</p>                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>(Clinical research ed.), 336(7639), 313–317.<br/> <a href="https://doi.org/10.1136/bmj.39456.552257.BE">https://doi.org/10.1136/bmj.39456.552257.BE</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|  | <p>Action/<br/>Participatory<br/>Action Research<br/>(PAR)</p> | <p>The broad purpose of action research: to explore a process, system or phenomena in order to make and evaluate the change. Improving healthcare policy and practice using research.</p> <p>In PAR it is important that the participants are co-researchers in all stages of the research process.</p> <p>Method: action research follows the following process: Planning in order to initiate change, implementing the research and change (acting), observing the process of implementation and consequences, reflecting or evaluating the processes of change and re-planning, acting and observing, and reflecting. Data can be collected through documents, interviews, and observation.</p> | <p>Accoe, K., Marchal, B., Gnokane, Y. et al. (2020). Action research and health system strengthening: the case of the health sector support programme in Mauritania, West Africa. Health Research Policy Systems, 18(25).<br/> <a href="https://doi.org/10.1186/s12961-020-0531-1">https://doi.org/10.1186/s12961-020-0531-1</a></p> <p>MacDonald, C. 2012. Understanding Participatory Action Research: A qualitative methodology option. Canadian Journal of Action Research, 13(2): 34-50.<br/> <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2566051/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2566051/</a></p> |

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|  | Community/<br>Participatory | <p>Purpose: presents people as researchers in pursuit of answers to questions encountered in their daily life.</p> <p>Method: include visual, art, music, drama, social media, interviews (conducted by participants themselves), photo-voice and other mediums of expression most comfortable for the participant researchers.</p>                                                                                                                                                                                                                                          | <p>Brent C. Elder &amp; Kenneth O. Odoyo (2018) Multiple methodologies: using community-based participatory research and decolonizing methodologies in Kenya, <i>International Journal of Qualitative Studies in Education</i>, 31:4, 293-311, DOI: 10.1080/09518398.2017.1422290</p> <p>Bradley, H.A., &amp; Puoane, T. (2007). Prevention of hypertension and diabetes in an urban setting in South Africa: participatory action research with community health workers. <i>Ethnicity and Disease</i>, 17(1):49-54.</p> |
|  | Historical                  | <p>Purpose: describes and examine events of the past to understand the present and anticipate potential future effects</p> <p>Method: the researcher may consult a range of printed, written, or digital evidence. Persons may also be consulted. The resultant history is arranged chronologically and presented as a factual tale. The sources range from manuscripts (such as account books, school records, marginalia, letters, diaries and memoirs) to imprints (such as textbooks, journals, children's books and other books of the period under consideration).</p> | <p>Given, L. M. (2008). <i>The SAGE encyclopedia of qualitative research methods</i> (Vols. 1-0). Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781412963909</p> <p>Thies, C.G. (2002), A Pragmatic Guide to Qualitative Historical Analysis in the Study of International Relations. <i>International Studies Perspectives</i>, 3: 351-372. <a href="https://doi.org/10.1111/1528-3577.t01-1-00099">https://doi.org/10.1111/1528-3577.t01-1-00099</a></p>                                                     |
|  | Narrative                   | <p>Purpose: to explore, collect and contextualise the human experience through text.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Holloway, I., &amp; Freshwater, D. (2007). Vulnerable story telling: narrative research in nursing. <i>Journal of Research in Nursing</i>, 12(6), 703–711. <a href="https://doi.org/10.1177/1744987107084669">https://doi.org/10.1177/1744987107084669</a></p>                                                                                                                                                                                                                                                         |



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|  |                             | Method: stories may be collected through interviews, focus groups, and through textual data contained in documents, in the newspaper, or on websites.                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|  | Biographical                | <p>Purpose: To explore the self-representation of the individual life ('autobiography') or a group of individuals.</p> <p>Method: Involves the collection and interpretation of 'personal' or 'human documents' that may include diaries, letters, autobiographies, biographies, memoranda and other materials.</p>                                                                                                                                                                                                                                                     | <p>Roberts, B. (2002). Biographical research. Open University Press: Philadelphia.</p> <p>Goodwin, J (Editor) (2012). SAGE Biographical Research. Vol. 1. SAGE Publications: Los Angeles</p>                                                                                                                                                                                                                                      |
|  | Feminist/<br>Transformative | <p>Debate exists whether this is a distinct research method or rather a philosophical/paradigmatic orientation.</p> <p>Purpose: it actively seeks to remove the power imbalance between the researcher and the participant (subject); it is politically motivated in that it seeks to change social inequality.</p> <p>Method: it is interdisciplinary, transdisciplinary and uses multi-methods. Feminist research designs use different methodologies including art, narrative, visual, video, text, interviews, focus groups, and all other forms of expression.</p> | <p>Kiguwa, P. (2019). Feminist approaches: An exploration of women's gendered experiences. In Laher S., Fynn A., &amp; Kramer S. (Eds.), Transforming Research Methods in the Social Sciences: Case Studies from South Africa (pp. 220-235). Johannesburg: Wits University Press. Retrieved May 20, 2020, from <a href="http://www.jstor.org/stable/10.18772/22019032750.19">www.jstor.org/stable/10.18772/22019032750.19</a></p> |

| <b>Mixed methods study:</b><br>The research problem/ questions indicate the need to collect both quantitative (QUAN) and qualitative (QUAL) data in a fixed or emerging fashion, and not just a mixing of methodologies and methods (or so-called multi-method research). Using both QUAN and QUAL data strengthens the validity of conclusions made. <ol style="list-style-type: none"> <li>MM consider the weight attributed to quantitative and qualitative data collection (equal versus primacy or driving) and the sequence of data collection (dependency and resultant point of interface or integration).</li> <li>Both QUAN and QUAL data as collected separately and collectively elicits core findings as deduced – also referred to as inferences (themes) and meta-inferences (meta-themes).</li> <li>The collection of both qualitative and quantitative data may strengthen the value and credibility of the study through for example <ol style="list-style-type: none"> <li>Corroboration or confirmation (triangulation)</li> </ol> </li> </ol> | Design                 | Brief description                                                                                                                                                                                                                                                                                                        | Source/Resources                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Convergent (parallel)  | Quantitative and qualitative data are separately, independently and concurrently collected, analysed and interpreted (inferences) followed by the mixing and integration of data in the form of meta-inferences.                                                                                                         | <a href="https://journals.sagepub.com/doi/pdf/10.1177/1558689807306132">https://journals.sagepub.com/doi/pdf/10.1177/1558689807306132</a><br><br><a href="https://sites.uci.edu/socscihonors/files/2017/09/Mixed_Methods_Research.pdf">https://sites.uci.edu/socscihonors/files/2017/09/Mixed_Methods_Research.pdf</a><br><br><a href="https://link.springer.com/article/10.1007/s11577-017-0454-1">https://link.springer.com/article/10.1007/s11577-017-0454-1</a><br><br><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5602001/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5602001/</a><br><br><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3569711/pdf/nihms432078.pdf">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3569711/pdf/nihms432078.pdf</a><br><br><a href="https://ebn.bmj.com/content/ebnurs/20/3/74.full.pdf">https://ebn.bmj.com/content/ebnurs/20/3/74.full.pdf</a> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Explanatory sequential | Quantitative data is collected and analysed first. The qualitative data collection is then informed by (dependent on) the quantitative findings to <i>explain</i> and contextualise poignant and critical quantitative findings.                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Exploratory sequential | qualitative data is collected first to understand/ unpack the phenomenon. This is followed by collecting quantitative data that is dependent on and more precisely <i>explores</i> and/or measures and/or tests such qualitative findings. This approach is often used in theory development and instrument development. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Embedded design        | Within either a traditional quantitative or qualitative study, a study of the other is                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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| <p>b. Exploration of paradoxes, diversities and divergencies</p> <p>c. Searching for true comprehensiveness and/or illumination</p> <p>4. MM is challenging as the researcher navigates the complex relationship between two seemingly opposing philosophic, ontological and epistemological underpinnings of <i>realist</i> positivism/ post-positivism on the one hand, and <i>relativist</i> interpretivism on the other hand – all under an umbrella often referred to as pragmatism.</p> |                              | embedded and plays a supplemental role to answer specific questions that require such a data collection method.                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Other (more complex) designs | E.g. Multiphase, Intervention, Case study, Participatory/Transformative                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                         |
| <p>Research synthesis <sup>3</sup></p> <p>Grant, M.J. and Booth, A. (2009), A typology of reviews: an analysis of 14 review types and associated methodologies. Health Information &amp; Libraries Journal, 26: 91-108.<br/> <a href="https://doi.org/10.1111/j.1471-1842.2009.00848.x">https://doi.org/10.1111/j.1471-1842.2009.00848.x</a></p>                                                                                                                                              | Design                       | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Source/Resources                                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Systematic review            | <p>A comprehensive review with a predetermined question and objectives, predetermined criteria for eligibility, searched at least two data sources of which one needed to be an electronic database, and performed data extraction and risk of bias assessment.</p> <p>Do not confuse a systematic review with a meta-analysis: a systematic review is a form of research synthesis while a meta-analysis is a statistical test that should be used in the analysis stage of a quantitative systematic</p> | <p>Akobeng AK. Understanding systematic reviews and meta-analysis Arch Dis Child 2005;90: 845–8</p> <p>Rohwer A, Garner P, Young T. Reading systematic reviews to answer clinical questions. Clinical Epidemiology and Global Health 2014; 2:39-46.</p> |

<sup>3</sup> Research syntheses (e.g. scoping reviews, systematic reviews, and so forth) utilise secondary data and are submitted to HREC as an **exemption application**.

|  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                | <p>review to pool relevant data per outcome across studies. Not all systematic reviews will contain meta-analyses, it is dependent on included studies and its relevant data. (A systematic review on a question about barriers and facilitators, experiences, meaning and behaviour will be including qualitative studies and thus will not contain meta-analyses.)</p> <p>Depending on the type of question that the systematic review addresses, systematic reviews can include all sorts of primary study types, for example, randomised controlled trials for intervention questions; cohort and case-control studies for questions on risk factors and associations; cross-sectional studies for questions on prevalence; qualitative studies for questions on barriers, facilitators, experiences, meaning and behaviour; diagnostic test accuracy or cross-sectional studies for questions on the accuracy of a diagnostic test; etc.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  | Scoping review | <p>Scoping reviews can incorporate a range of study designs to comprehensively map the extent, range and nature of existing research activity, pointing out gaps in the existing evidence and determining the value of undertaking a full (new) systematic review, and summarise and disseminate research findings.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. Implement Sci. 2010 Sep 20; 5:69. doi: 10.1186/1748-5908-5-69. PMID: 20854677; PMCID: PMC2954944.</p> <p>Arksey H, O'Malley L. Scoping Studies: Towards a Methodological Framework. Int J Social Research Methodology 2005;8(1):1-32.<br/> <a href="http://dx.doi.org/10.1080/1364557032000119616">http://dx.doi.org/10.1080/1364557032000119616</a></p> <p>Colquhoun HL, Levac D, O'Brien KK, Straus S, Tricco AC, Perrier L, Kastner M, Moher D. Scoping reviews: time</p> |

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|  |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                              | for clarity in definition, methods, and reporting. J Clin Epidemiol. 2014 Dec;67(12):1291-4. doi: 10.1016/j.jclinepi.2014.03.013. Epub 2014 Jul 14. PMID: 25034198.                                                                                                                                                                                                                                                         |
|  | Overview of systematic reviews   | An overview of systematic reviews uses explicit and systematic methods to search for and identify multiple systematic reviews on related research questions in the same topic area for the purpose of extracting and analysing their results across important outcomes. Overviews follow similar methods than a systematic review, but the unit of searching, inclusion and data analysis is systematic reviews rather than primary studies. | <a href="https://training.cochrane.org/handbook/current/chapter-v">https://training.cochrane.org/handbook/current/chapter-v</a><br><br>Hunt, H., Pollock, A., Campbell, P. et al. An introduction to overviews of reviews: planning a relevant research question and objective for an overview. Syst Rev 7, 39 (2018).<br><a href="https://doi.org/10.1186/s13643-018-0695-8">https://doi.org/10.1186/s13643-018-0695-8</a> |
|  | Other research synthesis designs | Various, see resource                                                                                                                                                                                                                                                                                                                                                                                                                        | Grant, M.J. and Booth, A. (2009), A typology of reviews: an analysis of 14 review types and associated methodologies. Health Information & Libraries Journal, 26: 91-108. <a href="https://doi.org/10.1111/j.1471-1842.2009.00848.x">https://doi.org/10.1111/j.1471-1842.2009.00848.x</a>                                                                                                                                   |