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## Research Newsletter

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## FROM THE EDITOR'S DESK

Dear readers,

On behalf of CRU and the Editorial Members of RECRUS, I would like to wish all of you a blissful and successful year ahead. 2021 was a great year where we had published the first and series of article for the newsletter as the Scientific Responses to COVID-19 Pandemic. I would like to thank our Pandemic Scientific Response Team for their hard work and dedication in producing timely comments and summaries on emerging evidence worthy of attention by clinicians, healthcare staff and the general public.

This issue brought to you the third appraisal addressing a methodological review of COVID-19 clinical research. The scientific rigor in the published reports was of concern due to the increased needs of fast dissemination of information. The review evaluates the methodological quality of COVID-19 studies using established tools and checklists. It was revealed that the papers reporting on COVID-19 research have a shorter time to publication and also unfortunately lower methodological quality when compared to non-COVID-19 papers historically. However, issues related to uncertain influence of biases from no-blinding to the geographical region and author were not addressed and may affect the review outcomes.

Do check out the "**Synopses on the Types of the Systematic Review**" where we included the summary of 10 different types of systematic reviews from our webinar. Also, do not miss out the synopsis on **"Key Skills in Academic Writing"** to ease your writing process. Recorded videos of both webinars are available upon request.

Lastly, kindly go through important announcements on the update of Standard Operating Procedure for the application to conduct non-experimental and experimental research in HPUPM. Also, do help us to fill up the survey on training topics and your opinion in structured trainings by CRU. There are upcoming events including the monthly series of **Meta-Journal Hour**, **Sample Size Determination Workshop** and the call for participation in the upcoming international congress on research integrity and meta-research.

We look forward to a productive and fruitful year ahead!




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# Appraisals in Meta-journal Hour 4

By Aazifah Ilham, Nurul Iman Hafizah and BH Chew

**The paper:**

Methodological quality of COVID-19 clinical research. doi: 10.1038/s41467-021-21220-5.


**Why was this study conducted?**

The COVID-19 pandemic began in early 2020 with major health consequences and substantial impact on economy as well. Due to the pandemic, there was an exponential increase in scientific publications related to COVID-19 in order to rapidly elucidate the natural history and identify diagnostic and therapeutic tools related to the disease [1]. The scientific rigor in the published reports is of paramount concern due to increased needs to rapidly disseminate information to the medical community, government agencies and general public.

Therefore, a systematic review was conducted to:

1. Evaluate the methodological quality of COVID-19 using established tools and checklist.
2. Evaluate the methodological quality of COVID-19 study by stratification of median time to acceptance, geographical regions as well as impact factors.
3. Compare methodological quality of research on COVID-19 to match control (historical control).

**How was it done?**

The systematic review was conducted on May 14, 2020 and was registered with PROSPERO and reported according to Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA). The search was created in MEDLINE by a medical librarian with expertise in systematic review using a combination of key items. The search was conducted in the MEDLINE, EMBASE and Cochrane Centre Register of Controlled Trial with the search were limited to English only publications.

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**Study selection**

All types of COVID-19 clinical studies, including case series, observational studies, diagnostic studies and RCTs were included. Studies that were exploratory or pre-clinical in nature (i.e. in vitro or animal studies), case reports or case series of <5 patients, studies published in a language other than English, reviews, methods or protocols, and other coronavirus variants such as the Middle East respiratory syndrome were excluded from the study selection.

**Data extraction**

First and corresponding authors' names, date of publication, title of manuscript and journal of publication were collected for all included full-text articles. Journal impact factor was obtained from the 2018 InCites Journal Citation Reports from Clarivate Analytics. Submission and acceptance dates were collected in manuscripts where available. Other information collected include study types, prospective or retrospective study designs, sex reporting, sample size calculation, method of SARS-CoV-2 diagnosis and ethics approval. Methodological quality assessment was conducted using the Newcastle–Ottawa Scale (NOS) for case–control and cohort studies [2], QUADAS-2 tool for diagnostic studies [3], Cochrane risk of bias for RCTs [4] and a score derived by Murad et al. for case series studies [5].

**Identification of historical control from identified COVID-19 articles**

Following the completion of extraction of COVID-19 articles, a historical control group was obtained by identifying reports matched in a 1:1 fashion. From the eligible COVID-19 article, historical controls were identified by searching the same journal in a systematic fashion by matching the same study designs ("case series", "cohort", "case control" or "diagnostic") in the same journals 12 months prior to the COVID-19 articles publication on the publisher website (i.e. COVID-19 article published on April 2020, going backwards to April 2019) and proceeding forward (or backward if a specific article type was not identified) in a temporal fashion until the first matched study was identified following abstract screening by two independent reviewers. If no comparison article was found by either reviewer, the corresponding COVID-19 article was also excluded from the comparison analysis.

**Data synthesis and statistical analysis**
Continuous variables were reported as mean (SD) or median (IQR) as appropriate, and categorical variables were reported as proportions (%). Continuous variables were compared using Student t-test or Mann–Whitney U-test and categorical variables including quality scores were compared by χ2, Fisher's exact test, or Kruskal–Wallis test.

**What was the finding?**

**Article selection**
A total of 14787 COVID-19 papers were identified as of May 14, 2020 and 4892 duplicate articles were removed. In total, 9895 titles and abstracts were screened, and 9101 articles were excluded due to the study being pre-clinical in nature, case report, case series <5 patients, in a language other than English, reviews (including systematic reviews), study protocols or methods, and other coronavirus variants with an overall inter-rater study inclusion agreement of 96.7% (κ = 0.81; 95% CI, 0.79–0.83). A total number of 794 full texts were reviewed for eligibility. Over 108 articles were excluded for ineligible study design or publication type (such as letter to the editors, editorials, case reports or case series <5 patients), wrong patient population, non-English language, duplicate articles, wrong outcomes and publication in a non-peer-reviewed journal. Ultimately, 686 articles were identified and included with an inter-rater agreement of 86.5% (κ = 0.68; 95% CI, 0.67–0.70).

**COVID-19 literature methodological quality**
Most studies originated from Asia/Oceania with 469 (68.4%) studies followed by Europe with 139 (20.3%) studies, and the Americas with 78 (11.4%) studies. Of included studies, 380 (55.4%) were case series, 199 (29.0%) were cohort, 63 (9.2%) were diagnostic, 38 (5.5%) were case–control, and 6 (0.9%) were RCTs. Most studies (590, 86.0%) were retrospective in nature, 620 (90.4%) reported the sex of patients, and 7 (2.3%) studies excluding case series calculated their sample size a priori. The method of SARS-CoV-2 diagnosis was reported in 558 studies (81.3%) and ethics approval was obtained in 556 studies (81.0%). Finally, journal impact factor of COVID-19 manuscripts was 4.7 (IQR, 2.9–7.6) with a time to acceptance of 13.0 (IQR, 5.0–25.0) days.

Overall, when COVID-19 articles were stratified by study design, a mean (SD) case series score (out of 5) was 3.3 (1.1), mean NOS cohort study score (out of 8) was 5.8 (1.5), mean NOS case–control study score (out of 8) was 5.5 (1.9), and low bias present in 4 (6.4%) diagnostic studies. Furthermore, in the 6 RCTs in the COVID-19 literature, there was a high risk of bias with little consideration for sequence generation, allocation concealment, blinding, incomplete outcome data, and selective outcome reporting.

For secondary outcomes, rapid time from submission to acceptance (stratified by median time of acceptance of <13.0 days) was associated with lower methodological quality scores for case series and cohort study designs but not for case–control nor diagnostic studies. Low journal impact factor (<10) was associated with lower methodological quality scores for case series, cohort, and case–control designs. Finally, studies originating from different geographical regions had no differences in methodological quality scores with the exception of cohort studies. When dichotomized by high vs. low methodological quality scores, a similar trend was observed with rapid time from submission to acceptance (34.4% vs. 46.3%, $p = 0.01$, low impact factor journals (<10) were associated with lower methodological quality score (38.8% vs. 68.0%, $p < 0.0001$). Finally, studies originating in either Americas or Asia/Oceania was associated with higher methodological quality scores than Europe.

**Methodological quality score differences in COVID-19 versus historical control**
539 historical control articles were matched to 539 COVID-19 articles from the same journal with identical study designs in the previous year for a final analysis of 1078 articles. Overall, 554 (51.4%) case series, 348 (32.3%) cohort, 64 (5.9%) case–control, 106 (9.8%) diagnostic and 6 (0.6%) RCTs were identified from the 1078 total articles. Differences exist between COVID-19 and historical control articles in geographical region of publication, retrospective study design, and sample size calculation. Time of acceptance was 13.0 (IQR, 5.0–25.0) days in COVID-19 articles vs. 110.0 (IQR, 71.0–156.0) days in control articles ($p < 0.0001$). Case-series methodological quality score was lower in COVID-19 articles compared to the historical control (3.3 (1.1) vs. 4.3 (0.8); $n = 554$; $p < 0.0001$). Furthermore, NOS score was lower in COVID-19 cohort studies (5.8 (1.6) vs. 7.1 (1.0); $n = 348$; $p < 0.0001$) and case–control studies (5.4 (1.9) vs. 6.6 (1.0); $n = 64$; $p = 0.003$;). Contrastingly, lower risk of bias in diagnostic studies was noted in 12 COVID-19 articles (23%; $n = 53$) compared to 24 control articles (45%; $n = 53$; $p = 0.02$). A similar trend was observed between COVID-19 and historical control articles when dichotomized by good vs. low methodological quality scores.

**How much can we take out from this research/paper?**
Strengths of this review include very relevant and important objectives, acceptably good search strategy, selection and data extraction process. However, papers published in journals not indexed by the databases could potentially yield worse quality issues. No pre-clinical studies and systematic reviews were included in this review, only English papers and published before May 2020. Methodological quality was assessed with widely used and validated tools but over

parts of the domains. Trained reviewers were conducting the study but uncertain influence of biases from no-blinding to the geographical region and author. Prejudice of time to acceptance and methodological quality could affect the assessment of the latter.

Assuming all the aforementioned have minimal impact on the methodological quality of the included papers, the review informs us that scientific papers on COVID-19 related areas across all types of study design suffered lower quality than those in the immediate pre-pandemic periods. The immediate questions come to mind will be are poor reporting equivalent to poorly conducted research? Were investigators taking 'shortcuts' in researches? Did longer peer-reviewing really improve the quality of the reporting? Could better editorial process be in place for short time to publication and yet maintain the quality of the research papers?

As the authors rightly indicated that poor science that is manifested during this pandemic endanger the public trust in 'modern' science and the whole scientific research enterprise. This has been quite thin for many recent years. A more responsible conducts in research has been 'preached' but hope cannot be high in the researchers but should be there among the editors of journals. Other safety mechanisms include educating the evidence users in critical appraisals of scientific papers. This may cover some very basic and key areas of scientific study appraisals such as about relevancy of the problem studies and the team who carry out the study, credibility of the methods and usefulness of the outcome measures. Doubtful reports should be further assessed when fuller data is available, and should not be propagated or pursued in further studies. If this fortress is reliably presence in many, then the speed of report and dissemination during the urgent period such as that of the pandemic COVID-19 is preferred not slow sharing of information. Surviving always take precedent over enjoying quality of life because losing the former none is left of the latter

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# SYNOPSES

## The Types of Systematic Reviewers In The Medical And Health Sciences



1. Introduction – **Associate Professor Dr. Chew Boon How**

Systematic reviews (SRs) are important in all research. It is necessary to provide the researchers a good grasp of the existing research before planning for a new one. Well conducted SRs inform us about the breadth and depth of a research topic, the levels of the evidence, and the quality of the earlier studies [1]. These would indicate whether further studies are needed and how they should be better done. SRs could reduce research waste and increase value [2].

The general classification of literature review are narrative review, qualitative systematic review and quantitative systematic review [3]. Other classifications include descriptive vs. integrative reviews, and mini- and full reviews. There are a few different classifications, and names to the same type of SR. In this webinar, we introduce to you 18 types of SRs.

SRs are more robust than literature review when mentioned in general. This is because SRs are systematically conducted. The defining features of a SR include [4]

1. Clearly articulated objectives and questions to be addressed
2. Inclusion and exclusion criteria, stipulated a priori (in a protocol), that determine the eligibility of studies
3. A comprehensive search to identify all relevant studies, both published and unpublished
4. A process of study screening and selection
5. Appraisal of the quality of included studies/ papers (risk of bias) and assessment of the validity of their results/findings/ conclusions
6. Analysis of data extracted from the included research
7. Presentation and synthesis of the results/ findings extracted
8. Interpret the results, potentially establishing the certainty of the results and making and implications for practice and research
9. Transparent reporting of the methodology and methods used to conduct the review

Hence, SRs describe and standardize reproducible methods to appraise the validity of studies to minimise errors in the process. Therefore, a SR is considered a research project on its own collecting data from primary studies compared to clinical research/studies that collect data from individual patients.

The choice between different review types will depend on the objective of the review, time available to write the review and the number of co-authors [3, 5]. Conducting a SR is a complex business even for experienced users. Nevertheless, the first step towards that is getting to know what they are. This is the purpose of this webinar.

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2. Prevalence and/or Incidence reviews - **Prof. Madya Dr. Sethu Thakachy Subha**

Prevalence and incidence data systematic reviews includes the proportion of a population who have a certain disease (the prevalence) and how often a disease occurs (the incidence). This review provides an accurate measurement and quantify disease amongst populations. This is critically important for governments, policy makers, health professionals and the general population. The aim of the systematic review is to determine the prevalence and/or incidence of a certain condition. The indications of this systematic review are to monitor trends in disease burden and emergence (describe the geographical distribution), Health care planning and resource allocation as well as to design further etiological studies.

Systematic reviews of prevalence and incidence data have the potential to support healthcare professionals, policy-makers, and consumers in making evidence-based decisions that effectively target and address burden of disease issues both now and into the future. Reviews of prevalence and incidence are predominantly derived from observational studies. Components of a systematic review protocol of prevalence and incidence should follow the same basic principles of systematic review of other types of data. Various components of this systematic review include the following:

1. Clear title page which reflects the core elements of the protocol and including the phrase 'A systematic review protocol'.
2. Comprehensive background that cover all the main elements of the topic under review.
3. The review questions should describe the particular issue, those affected by it, the location and time period of its occurrence.
4. The studies included into systematic reviews of prevalence and incidence should follow the population, intervention, comparator, and outcome structure. Munn et al recommended Mnemonic ` CoCoPop mnemonic (Condition, Context and Population) for reviews assessing prevalence and incidence.( Munn et al. Methodological guidance for systematic reviews of observational epidemiological studies reporting prevalence and cumulative incidence data. Int J Evid Based Healthc. 2015;13(3):147-153)
5. Appropriate data bases to search must be included.

6. A Critical appraisal tool specifically for prevalence studies should be developed and analysis must be conducted by two independent reviewers. (eg.The Joanna Briggs Institute Prevalence Critical Appraisal Tool)
7. The data extraction should be modified to suit the variables of interest from the included studies.
8. Synthesis of the extracted data from included studies should be mentioned. (meta-analysis /narrative summary)
9. Results should include the description of included and excluded studies. The results should focus on methodological quality as determined by relevant critical appraisal tool.There should be a detailed description of the results of the review and data synthesis.
10. Discussion session should include the results of the synthesis as well as any limitations of the primary studies included in the review and of the review itself. The results should be discussed in the context of current literature, practice and policy. This should also include the strength of the evidence, issues arising from the conduct and findings of the review and limitations.
11. Conclusion session should include a summary of the major findings; Issues related to the quality of the research within the area of interest; Other issues of relevance; Potential limitations of the systematic review.
12. The systematic review of prevalence and incidence should alos include conflict of interest, acknowledgements, references and appendices.

The limitations of the systematic review of prevalence and incidence are; 1. related to differences between included studies, (different study design, measurements, geographical location.2. Inappropriate to combine different studies statistically. These limitations can overcome by rigorous data review and analysis.

In conclusion, prevalence and incidence systematic reviews provide useful information for healthcare professionals and policy makers on global burden of diseases, changes and trends over time in diseases, geographical distributions of diseases and future research priorities.

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3. Etiology and/or Risk reviews – **Cik Nurul Iman Hafizah Adanan**

Systematic reviews aim to appraise and synthesise available evidence addressing a specific research question whereas a meta-analysis is a statistical summary of the results from the relevant studies. Although systematic reviews and meta-analysis of randomized controlled trial (RCT) are regarded as the highest quality evidence, systematic reviews of etiology studies are also becoming prevalent in the field of medical and health sciences.

**What are etiology studies?**

Etiology studies are also known as association studies whereby it aims to investigate the association or relationship between an exposure and health outcome. Studies addressing associations are conducted specifically to identify factors related to the investigated outcome. Essentially, etiology studies are important to study the outcomes of exposures that are difficult or impossible to study in RCT such as smoking. Therefore, the best available evidence must be evaluated to determine if there is a valid association between the exposure and outcome. The evidence then needs to be reviewed to determine whether there is anything confounding that can explain the association. The question of whether an association is causal or not arises in case a valid association is seen. However, it should be noted that not all associations are causal.

**Preparing etiology and/or risk systematic review: An Overview [1]**

1. Building a review team
- Team should consist of both content knowledge and methodological expertise especially in regard to identifying potential confounding variables or assessing exposure measurements and to determine whether a meta-analysis is feasible.

2. Shaping the research question
- Clear research question is essential to determine exposure and outcomes of interest.

3. Defining population, exposure and outcomes
- Study population should reflect the target population (eg: population wo which the results should be applicable)
- Definition and measurement of many exposures in etiology studies should be clearly defined and the comparability of assessments across studies needs to be assessed.
- Determination of how the outcomes of interest is measured also needs to be considered.

4. Considering confounding and bias
- Confounding occurs when comparison groups differ with respect to the risk of outcomes that is beyond the exposure of interest.
- It is not only whether confounding is present or not, but also to what extent the confounding exists.

5. The protocol

- Every systematic review should be planned in a detailed protocol. The key important elements are outlined below:
  - Background and rationale
  - Review question(s)
  - Definition of exposures and outcomes
  - Tabulation of potential confounders and biases that could affect study results
  - Study eligibility criteria
  - Literature search for relevant studies
  - Data extraction (study characteristics and results)
  - Assessment of risk of bias and study sensitivity
  - Statistical methods
  - Planned analyses
  - Approach to how the body of evidence will be judged

**Interpretation and discussion of results**

Researchers should keep in mind that statistical significance is not only an indicator of whether a true relation exists or not, but other factors such as confidence interval, effect size and risk of bias should be considered. If included studies have a low risk of bias and heterogeneity does not seem large, researchers may conclude that the main results provide reasonably valid estimates. One of the checklists that can be utilised to formally judge included studies in the review is the Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) system considering study design, risk of bias, degree of inconsistency, imprecision and indirectness (applicability) of results, and reporting bias [2]. The integration of different sources of evidence may also facilitate a final judgement to assess causality. For example, if different approaches all point to the same conclusion, it may strengthen confidence that the finding may be causal. However, discussing competing explanations systematically will add value to the interpretation of the results rather than selecting studies that support the same hypothesis. Lastly, the significance of the findings in terms of clinical and public health relevance should be discussed. It should be noted that the identification of likely causes does not necessarily translate into recommendations for interventions but rather detailed recommendations for specific future studies.

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4. Expert opinion/policy reviews - **Prof. Madya Dr. Lee Khuan**

Expert opinion/policy reviews are aimed to review and synthesise current expert opinion, text or policy on a specific phenomenon, population and intervention and context. An expert review is needed because many clinical questions cannot be fully answered by evidence derived from quantitative or qualitative research designs alone. Furthermore, many areas in healthcare decision-making are supported by clinicians' tacit knowledge derived from their clinical experiences but not from empirical research/statistical findings. Thus, evidence generated from a systematic review of text and opinion may be required as the best available evidence.
Importantly expert opinion draws on the experience of practitioners, whether expressed by an individual, by a learned body or by a group of experts in the form of a consensus guideline to facilitate or complement decision making. Nevertheless, it doesn't mean that the superior quality of evidence derived from

quantitative or qualitative research is to be denied; rather, that in its absence, it is not appropriate to discount expert opinion as non-evidence.
The research question for an expert review usually starts with five systematic steps as forming review question/specific objectives, setting inclusion criteria, search strategies, critical appraisal and data extraction. However, a crucial step following is textual data analysis designed to aggregate conclusions from the review. Data extracted will be categorised based on similarity in meaning and determined by the reviewers. Finally, the reviewers will discuss and establish synthesised findings for evidence-based practice recommendations.

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5. Psychometric reviews – **Puan Nurfaizah Saibul**

Research performed with outcome measurement instruments of poor or unknown quality constitutes a waste of resources and is unethical [1]. Selecting the best outcome measurement instrument for the outcome of interest requires high quality studies that document the evaluation of the measurement properties of relevant outcome measurement instruments in the target population and a high-quality systematic review of studies on measurement properties in which all information is gathered and evaluated in a systematic and transparent way. Hence, psychometric systematic reviews are the best option to ensure the validity and reliability of health measurement instruments [2].

Psychometric systematic reviews also known as systematic reviews of measurement properties [2,3]. Psychometric reviews aim:

1. To systematically review the psychometric properties of existing test or assessment (validity and reliability) used in clinical research and practice.
2. To assess the quality or characteristics of health measurement instruments.
3. To determine the best measurement or assessment tool for use in practice for a certain condition or factor.

A psychometric systematic review may be undertaken on the measurement properties of [3,4]:

i. One measurement instrument,
ii. The most utilized measurement instruments measuring a specific construct,
iii. All available measurement instruments to measure a specific construct in a specific population or,
iv. All available measurements in a specific population that does not specify the construct to be measured.

The Consensus-based Standards for the selection of health measurement Instruments (COSMIN) group have developed guidance for conducting psychometric reviews. The COSMIN initiative aims to improve the selection of outcome measurement instruments in research and clinical practice by developing tools for selecting the most suitable instrument for the situation at issue. The COSMIN methodology focusses on patient-reported outcome measures (PROMs) used as outcome measurement instruments. The methodology can also be used for other types of measurement instruments (like clinician-reported outcome measures or performance-based outcome measures), or other applications (e.g. diagnostic or predictive applications), but the methodology may need to be adapted for these other purposes [3,4].

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6. Prognostic reviews - **Dr. Nur Aazifah Ilham**

Prognostic research is an investigation of the relation between future outcomes (endpoints) among people with a given baseline health state (start point) in order to improve health. The PROGRESS (PROGnosis RESearch Strategy) framework defined four types of prognosis research objectives:

a) To summarise overall prognosis (eg overall risk or rate) of health outcomes for groups with a particular health condition (Fundamental)
b) To identify prognostic factor associated with changes in health outcome. (Prognostic Factor)
c) To develop, validate and examine the impact of prognostic models for individualised prediction of such outcome. (Prognostic model)
d) To identify predictors of an individual response to treatment. (Stratified)

Each objective requires specific methods and tools for conducting a systematic review and meta-analysis. The Cochrane Prognosis Method Group has developed guidance to perform a systematic review of prognosis studies. Up to date the Cochrane Prognosis Method Group have develop two types of Prognostic Research Systematic Review which are for prognostic factor and prognostic model. The review process almost similar with traditional systematic review as below.

Review process:

1. Defining the review question
2. Searching and selection of eligible studies
3. Data extraction
4. Evaluating applicability and risk of bias of primary study
5. Meta-analysis
6. Quantifying and examining heterogeneity
7. Examining small-study effects
8. Reporting and interpretation of result

In summary, the systematic review is needed to summarize the growing amount of prognostic evidence as well as to evaluate the quality of available evidence in order to facilitate optimal use of existing evidence for medical practice and policy maker. With implementation within Cochrane, it is ensured that the reviews of high quality will be produced and have impact in clinical practice.

**References:**

1. Hemingway et al Prognosis Research Strategy (PROGRESS) 1 : A Framework for researching clinical outcome BMJ 2013

2. Riley et al Prognosis Research Strategy (PROGRESS) 2 : Prognostic Factor Research PLOS Med 2013
3. Steyerberg et al Prognosis Research Strategy (PROGRESS) 3: Prognostic Model Research PLOS Med 2013
4. Hingorani et al Prognosis Research Strategy (PROGRESS) 4 : Stratified medicine research BMJ 2013
5. Riley et al A guide to systematic review and meta-analysis of prognostic factor studies BMJ 2019
6. Debray et al A guide to systematic review and meta-analysis of predictive model performance BMJ 2017.

7. Methodological systematic reviews - **Prof. Dr. Chan Yoke Mun**

Methodological systematic reviews are less explored compared to other SRs. It is specifically performed for methodological purposes, aims to examine and investigate current research methods and potentially their impact on research quality as well as to examine any methodological issues relating to the design, conduct and review of research studies and evidence syntheses.

Structures of Methodological systematic reviews are quite similar to other types of SRs, with the major different is reflected on the discussion, at which it reflects implications for methodological research. In the discussion section, statements should be as clear and explicit as possible to allow others to make decisions about future methodology research. Examples of Methodological systematic reviews include strategies than can be used to improve recruitment to trials and retention of participations in trials. This allow readers or researchers to have a better idea on the best strategies that can be applied in recruitment and thereafter to retain the participants in the trial.

**References**

1. Munn Z, Stern C, Aromataris E, et al. What kind of systematic review should I conduct? A proposed typology and guidance for systematic reviewers in the medical and health sciences. *BMC Med Res Methodol*. 2018 Jan 10;18(1):5.
2. Clarke M, Oxman AD, Paulsen E, Higgins JP, Green S, Appendix A: Guide to the contents of a Cochrane Methodology protocol and review. In: Higgins JP, Green S, eds. Cochrane Handbook for Systematic Reviews of Interventions. Version 5.1.0 ed: The Cochrane Collaboration 2011.
3. Cochrane Methodology Reviews. https://methodology.cochrane.org/ Accessed on 20 September 2021

8. Integrative reviews - **Prof. Madya Dr. Niazlin Mohd Taib**

Integrative review (IR) provides massive reviews which analyse diverse methodologies of either experimental or non-experimental research. IR synthesise past empirical or theoretical literature [1].

IR assists to review evidence or gaps in the literature, presenting the current state of knowledge, highlighting important issues that are still unresolved, bringing the previous work to present, drawing overall conclusions from separate studies on similar topic/focus/hypotheses, and directing future research [2].

IR is commonly used in the nursing profession but also can be used in other fields. The advantages of IR include providing comprehensive results, incorporating a wide range of objectives, defining concepts, reviewing theories, analysing methodologies and evidence, contributing to theory and policy development, providing information for decision making, and improving clinical practice.

The main difference between a systematic review and an integrative review is the types of studies that are included in the review. Systematic reviews include experimental studies which mainly use randomized controlled trials besides analyse using statistical and partly narrative methods while integrative reviews include both experimental or non-experimental, quantitative or qualitative studies, and use narrative analysis only.

There are 5 Stages to conduct the IR[2] which are:
1. Problem Identification
2. Literature search
3. Data evaluation
4. Analysis / Interpretation
5. Presentation of Results

**1. Problem Identification**

Due to the vast spectrum of articles included, the writer should set targets and limits the search criteria by identifying the objectives and the problem, variables of interest, distinguishing relevant from irrelevant material, establishing a "working" statement or questions to be addressed through the review process.

**2. Literature search**

The literature search should be comprehensive but limited to the "resources" relevant to the focus or objectives of the review and sampling Size must be justified. In the methodology sections, several criteria should be included such as database search, the terminology used, additional search strategies, inclusion and exclusion criteria.

**3. Data evaluation**

The evaluation of data is crucial to ensure the reliability of the data. The method of evaluation differs depending on the standard that is determined by the writers by using expert opinions, software for example.

**4. Analysis / Interpretation**

The relevant extracted data must be categorised, coded, or summarized. Constant comparison method to identify patterns, resemblances, differences, themes, and associations. The analysis will be diverse, yet equally substantial and meaningful, interpret and conclude by focusing on different elements. These elements include the structure of the research, the outcome of the study, the substance of the study, and how the study is performed. An evidence table is required to assist in the analysis.

**5. Presentation of results**

Although the interpretation may focus on different elements and the results will be diverse, they should be equally significant and meaningful. The conclusions should be produced based on the results of the review and avoid personal bias.

The examples of integrative review are as follows:

Silva DD, Tavares NV, Alexandre AR, Freitas DA, Brêda MZ, Albuquerque MC, Melo VL. Depression and suicide risk among nursing professionals: an integrative review. Revista da Escola de Enfermagem da USP. 2015; 49:1023-31.

Sefcik JS, Ersek M, Hartnett SC, Cacchione PZ. Integrative review: Persistent vocalizations among nursing home residents with dementia. International psychogeriatrics. 2019 May;31(5):667-83.

Cornine A. Reducing nursing student anxiety in the clinical setting: An integrative review. Nursing education perspectives. 2020 Jul 1;41(4):229-34.

Jolly PM, Kong DT, Kim KY. Social support at work: An integrative review. Journal of Organizational Behavior. 2021 Feb 1;42(2):229-51.

Smith PJ, Merwin RM. The Role of Exercise in Management of Mental Health Disorders: An Integrative Review. Annual review of medicine. 2021 Jan 27;72:45-62. Smith PJ, Merwin RM. The Role of Exercise in Management of Mental Health Disorders: An Integrative Review. Annual review of medicine. 2021 Jan 27;72:45-62.

**References**

1. Broome ME. Integrative literature reviews for the development of concepts. Concept development in nursing: foundations, techniques and applications. Philadelphia (USA): WB Saunders Company. 2000:231-50.
2. Whittemore R, Knafl K. The integrative review: updated methodology. Journal of advanced nursing. 2005 Dec;52(5):546-53.

9. Realist syntheses - **Dr. Nur Aazifah Ilham**

Realist Synthesis is literature review methodology for understanding how, for whom, and under what circumstances complex interventions function in a complex environment. It focuses on understanding and unpacking the mechanism by which an intervention works or fails to work thereby providing an explanation as opposed to judgment about how it works. The realist approach is fundamentally concerned with theory development and refinement, accounting for context as well as outcomes in the process of systematically and transparently synthesizing relevant literature. RS using context-mechanism-outcome (CMO) configuration to articulate program theories.

The aim of doing RS is to articulate underlying programme theories and then to test the existing evidence to find out whether and where these theories are pertinent and productive. Program theory is the theory that hypothesizes how a program is expected to work, given contextual influences and underlying mechanism of action. It takes into account all the factor involved in determining program success or failure.

There are several features that distinguish realist synthesis from systematic review summarize as below:

| **Realist Synthesis** | **Systematic review and meta-analysis** |
|---|---|
| Theory driven | Method driven |
| Deprioritizes methodology hierarchies and emphasize fallibility of all knowledge sources | Appraises paper on the basis of a hierarchy of study design. |
| Use all parts of primary research papers as evidence | Uses the results of primary studies in meta-analysis |
| Uses a variety of data sources, including grey literature, commentaries, etc | Often uses primary research result only |
| Moves away from generalizable claims and advocates for cumulation of evidence-informed theory over the course of time | Seeks research results that can be generalised across contexts |

Basically, there are 5 steps in conducting RS.

1. Define the scope of the review by identifying the research question, clarify the purpose of the review and articulate the programme theories.
2. Search for the appraise the evidence and test the relevance.
3. Extract and synthesize the findings
4. Develop narrative
5. Disseminate review with findings, conclusions and recommendation according to RAMESES.

In summary RS is a mmethodology that extends the scope of the traditional systematic review which increasing used in the evaluation of complex intervention seeking more to explain than judge if the intervention is effective or not, by investigating why, what underlying mechanism to success or fail, to whom it works.

**References:**

1. Rycroft-Malone et al. Realist synthesis: illustrating the method for implementation research Implementation Science 2012, 7:33
2. Justine Jagosh et al. Realist Synthesis for Public Health: Building an Ontologically Deep Understanding of How Programs Works, For Whom and In Which ContextsAnnu. Rev. Public Health 2019. 40:361-72
3. Booth et al. Understanding the theoretical underpinning of the exercise component in a fall prevention programme for older adults with mild dementia: a realist review protocol Systematic Review 2016 5:119
4. Booth et al Motivation as a mechanism underpinning exercise-based fall prevention programmes for older adults with cognitive impairment : A realist Review BMJ 2019: 9
5. Wong et al. RAMESES publication standards BMC Medicine 2013 11:21
6. Kislov et al. Harnessing the power of theorising in implementation science Implementation Science 2019 : 14:103

10. Rapid reviews - **Prof. Madya Dr. Maizaton Atmadini Abdullah**

- Rapid reviews are a form of evidence synthesis ideally suited to answering focused research questions, investigating emerging topics or assessing the current knowledge base surrounding a policy or practice.
- Components of the systematic review process are simplified or omitted to produce information in a short period of time.
- Conducted as an alternative to a systematic review when a review needs to be completed quickly.
- Timeframes for conducting rapid reviews are considerably less than systematic reviews.
- Follow the same methods and protocols as a systematic review,
- Which components are simplified or omitted are often determined by the nature of the topic or the types of information wanted by the organisation for which the review is being conducted, so there is no one correct way to conduct these types of reviews.

CHARACTERISTICS OF RAPID REVIEW

- a clearly stated set of objectives with pre-defined eligibility criteria for studies
- an explicit, reproducible methodology
- a systematic search that attempts to identify all studies that meet the eligibility criteria

- an assessment of the validity of the findings of the included studies, for example through the assessment of risk of bias; and
- a systematic presentation and synthesis of the characteristics and findings of the included studies.

CAN BE USED FOR:

- new and emerging topics
- updating previously completed reviews
- policy development, implementation or assessment.
- comparison of protocols

TYPES OF RAPID REVIEW

- rapid systematic reviews
- expedited reviews
- rapid evidence synthesis
- rapid evidence reviews
- rapid evidence summaries
- rapid evidence assessment
- evidence summaries
- evidence reviews

Rapid reviews can differ from systematic and other more rigorous reviews in a number of ways:

- Inclusion/exclusion criteria may be used to limit the results.
- Search strategies are often restricted by date, geography, language or topic.
- Fewer sources are searched, such as using fewer databases, limited or no grey literature searching, or not including hand searching.
- Fewer reviewers may be used for the screening or data analysis stages.
    - This may include only using one reviewer in each stage.
    - Another method is to use a second reviewer to check a small percentage of results to provide cross checking and consensus.

ADVANTAGES AND DISADVANTAGES OF A RAPID REVIEW

**Advantages**

- Shorter time frame allows for quicker outcomes.
- Only one reviewer required.

**Limitations**

- Search is not as comprehensive, uses fewer databases or limits types of studies.
- Single reviewer offers more opportunity for bias or errors in selection process.
- Limitations and potential biases when omitting components of the review process.
- Interpretation of the findings can only be limited or cautious due to limitations in review process.
- Can impact policy and practice but systematic reviews are still needed.

11. Umbrella reviews (systematic reviews of reviews) - **Dr. Tan Kit-Aun**

Recent years have witnessed rapid proliferation of umbrella reviews in health sciences literature. This presentation shares ten key practical points that are necessary for conducting and reporting such studies. Two examples of umbrella reviews are used to illustrate these points as applied to the conducting and reporting of umbrella reviews.

12. Mixed methods reviews – **Puan Salwana Ahmad**

Although Randomized Controlled Trial (RCT) is considered as the gold standard (E.g.: intervention with drugs) when proposing for medical treatment and disease management, medical practitioners, nurses, or policy makers has concerned with more than cause-and-effect questions when dealing with medical uncertainty and diverse origin of healthcare that need special/particulars topics. This is reflected in the wide range of research approaches utilized in the health field to generate knowledge for practice.

Pearson et al., 2005 suggested that not only intervention matters, but its i) feasibility (whether an intervention is physically, culturally, or financially practical or possible), ii) appropriateness (how an activity or intervention relates), iii) meaningfulness (relates to the personal experience, opinions, values, beliefs, and interpretations of patients) and iv) effectiveness (relationship between an intervention and clinical or health outcomes). New approaches to synthesizing different kinds of evidence are needed based on many research methodologies (e.g., Qualitative, economic, and diagnostic accuracy, behavioural –oriented approaches (humanity, social and behavioural sciences) to address questions on a given issue.

**A Mixed Method Approach to systematic review by definition:** A combination of quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study (Johnson & Onwuegbuzie, 2004). Mixed-methods research includes the following:

1) Focuses on research questions that call for real- life contextual understanding and multi-level perspectives.
2) Employs rigorous quantitative research assessing magnitude and frequency of constructs, and rigorous qualitative research exploring the meaning and understanding of constructs.
3) Utilizes multiple methods (e.g., Intervention trials and in-depth interviews); and
4) Integrates these methods to draw on the strengths of each into one final summary.

This review applies the principles of mixed-methods research to the review process, that are relevant and sensitive to the health needs from different types of studies in different fields (but focused on the same topic). They are combined and generated evidence to guide clear decision-making. Thus, a mixed-methods review designed to provide guidance to clinical decision makers on the management of a particular symptom. Examples : Conduct a meta-analysis of trials evaluating the effectiveness of specific interventions; a meta- synthesis of qualitative studies on patients' experience; a synthesis of cost–benefit studies on the interventions and then combine the findings of the three to identify the most effective, acceptable and economic approach (Pearson et al., 2015)

**Reference:**

1. Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come. Educational Researcher, 33(7), 14–26. https://doi.org/10.3102/0013189X033007014
2. Pearson, A., Institute, J. B., Building, M. G., Hospital, R. A., Frcn, F., Wiechula, R., Bn, B. A., Dnurs, M., Court, A., & Lockwood, C. (2005). model of evidence-based healthcareA Pearson The JBI model of evidence-based healthcare. LtdOxford, UKJBRInternational Journal of Evidence, 3, 207–215.

| **Walker and Avant's method (2005)** | **Rodgers' method – evolutionary approach (1989, 2000)** |
|---|---|
| 1. **Select a concept**<br>2. **Determine the aims or purpose of analysis**<br>3. **Identify all uses of the concept you can discover**<br>4. **Determine the defining attributes**<br>5. **Identify a model case**<br>6. **Identify borderline, related, contrary, invented and illegitimate cases**<br>7. **Identify antecedents and consequences**<br>8. **Define empirical referents** | 1. Identify the concept of interest and associated expressions (including surrogate terms)<br>2. Identify and select and **appropriate realm** for data collection<br>3. **Collect** relevant data<br>4. **Analyse** the data<br>5. Identify a **criterion** of the concept<br>6. Identify **implication, hypotheses and implications** for further development of the concept |

3. Pearson, A., White, H., Bath-Hextall, F., Salmond, S., Apostolo, J., & Kirkpatrick, P. (2015). A mixed-methods approach to systematic reviews. International Journal of Evidence-Based Healthcare, 13(3), 121–131. https://doi.org/10.1097/XEB.0000000000000052
4. Petticrew, M. (2003). Why certain systematic reviews reach uncertain conclusions. In British Medical Journal (Vol. 326, Issue 7392). https://doi.org/10.1136/bmj.326.7392.756
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13. Concept analyses - **Cik Nurul Iman Hafizah Adanan**

A concept represents a symbol or a building block of a broader scope of study. A concept analysis can be defined as the dissection of a concept into simpler elements to promote clarity while providing correlative understanding within a specific field of study [1]. As such, a concept analysis should be undertaken to achieve a better understanding of the concept should there be any lack of clarity surrounding the concept. Furthermore, a concept analysis is not only able to explain the meaning of the concept in current use, but also future development of the concept.

***Purposes of concept analysis*** [1,2]

- To distinguish between the defining attributes of a concept
- To refine ambiguous concepts in theory
- To identify pertinent areas for research
- To develop a rigorous process for operationalizing variables (eg: tool development)
- To develop critical thinking through analysis and synthesis

***Approaches to concept analyses***

The emergence of concept analysis within healthcare disciplines is essential to build its scientific research base from a set of established key concepts pertaining to its area of interest (Weaver and Mitcham, 2008). Regardless of the discipline, the process of knowledge development undertaken by research studies should begin with an exploration of the existing knowledge and developing a conceptual and theoretical understanding of the phenomena (concepts) to be researched. The most appropriate approach will depend on the overall purpose of concept analysis of whether it aims to integrate an existing knowledge into a concept or to refine or clarify a single concept.

While there are many established approaches to concept analysis, the two most common approaches used in healthcare research are the Walker and Avant's method [2] and Rodgers' method – evolutionary approach [3]. The summary of both approaches is outlined in the table below [1]:

***Conclusion***

Concepts are important to the development of knowledge and theory within all scientific disciplines. However, concepts under the domain of healthcare are often unstructured and whose meaning is unclear and poorly defined. Therefore, conceptual clarity is required in order to establish disciplinary knowledge that can enhance or improve practice. A completed concept analysis will assist the researcher in the identification of all aspects of the concept. The concept analysis will require the researcher to dissect the concept into several descriptors (antecedents, consequences, and attributes) to transform an abstract idea into a more tangible concept. The concept analysis allows the researcher to progress to subsequent phases of the research process such as operationalizing the concept, selecting a design, and choosing an appropriate measurement instrument.

Moreover, concept analysis is not an exercise for the faint-hearted. It requires rigorous sampling, data collection and analysis, regardless of the framework adopted and must, ultimately, be undertaken as a means of developing theory and knowledge within a discipline.

***References***

1. Foley AS, Davis AH (2017). A Guide to Concept Analysis. *Clin Nurse Spec*, 31(2):70-73. https://doi.org/10.1097/NUR.0000000000000277.
2. Walker L, Avant K (2005). Strategies for theory construction in nursing (4th Ed). Prentice Hall, New Jersey.
3. Tofthagen R, Fagerstrøm LM. (2010). Rodgers' evolutionary concept analysis--a valid method for developing knowledge in nursing science. Scand J Caring Sci, 24(Suppl 1):21-31. https://doi.org/10.1111/j.1471-6712.2010.00845.x.

14. Summary – **Associate Professor Dr. Chew Boon How**

There are different types of systematic reviews for different purposes as directed by the review/research question [1].

- There is a unique purpose/strength for every type of review
- There are some similarities in them
- All have to be explicitly described and reported
- All have to be robustly done

A preceding systematic review is 'compulsory' for every new research. This helps in substantial ways to

- conceptualise and operationalise variables [2]
- reduce further waste and increase value through knowing about the existing level of evidence [3]
  - ✓ A good evidence- further study or no study is needed
  - ✓ Modest and uncertain evidence- larger scales and/or better designed study are likely to be needed
  - ✓ No evidence- further research or first trial is encouraged

Every reviewer has to take courses to learn how to conduct the right systematic review well [4]. This skillset could also be learned by getting involved in a guided or supervised review project.

**References**

1. Bello A, Vandermeer B, Wiebe N, et al. Evidence-Based Decision-Making 2: Systematic Reviews and Meta-Analysis. Methods Mol Biol. 2021;2249:405-428. doi: 10.1007/978-1-0716-1138-8_22. PMID: 33871856.
2. Clarke M. Doing new research? Don't forget the old. PLoS Med. 2004 Nov;1(2):e35. doi: 10.1371/journal.pmed.0010035. Epub 2004 Nov 30. PMID: 15578106; PMCID: PMC529424.
3. Research: increasing value, reducing waste. Published as a series in The Lancet January 8, 2014. Accessed on 3 December 2021: https://www.thelancet.com/series/research
4. Kisely S, Siskind D. Undertaking a systematic review and meta-analysis for a scholarly project: an updated practical guide. Australas Psychiatry. 2020 Feb;28(1):106-111. doi: 10.1177/1039856219875063. Epub 2019 Sep 12. PMID: 31512482.

# Key Skills in Academic Writing: A Summary

By: Nurul Iman Hafizah binti Adanan


This is a summary from the webinar on "Key Skills in Academic Writing" that was held on 27th December 2021. The recording video of the webinar is currently in embargo. For a full access to the video recording of the webinar, please kindly contact CRU at cru_hpupm@upm.edu.my.

## Introduction

Academic writing is a unique genre of writing, which usually has an educational function that allows further elaboration and explanation. Essentially, academic writing is clear, concise, focused, structured and backed up by evidence to demonstrate understanding or perspectives in describing theories, processes and practices or to answer to a specific hypothesis or research question.

Some of the key features in academic writing include:


## Important Components in Academic Writing

### 1) Language and Styles

Academic texts are generally characterised as **formal, objective and cautious**. In order to establish authority, authors will use language that is more formal than the language that is typically used in casual conversation or that which is used in other forms of writing such as emails, gossip magazines, blogs. In academic writing, language is also used to present claims or conclusions in an appropriately cautious and qualified manner.

| Features | Journalistic text | Academic text |
|---|---|---|
| **Readers** | General public/ laypersons | People with expertise, academics, researchers |
| **Purpose** | To engage interest, to entertain | To extend knowledge, to discuss ideas |
| **Layout** | Depends on type of publication, informal | Specific format, headed section, in-text citations, list of references |
| **Starting point** | Hot news/ viral issues | Research gap leading to research questions |
| **Information presented** | Through feelings or images | Through explanation, evidence |
| **Sources of information** | Personal experiences, words of mouth | Published work of academics, carefully referenced |
| **Language** | Informal, conversational language | Formal, academic and cautious language |

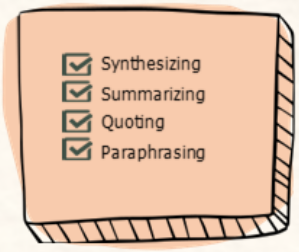
## 2) Voice

Characteristically, academic writing has an objective tone: that is, the language of a written text sounds independent from the writer and reader. An objective tone can be achieved with impersonal language.
Personal language is usually avoided in academic writing because it is subjective and therefore may decrease the authority of the text. Some of the examples of personal language include:

- Using personal pronouns such as *"I think"*, *"you should"*, *"my opinion"*
- Judgemental words that indicate feelings such as *"I am convinced"*, *"I dislike"*
- Words that emotive such as *"terrible"*, *"horrific"*

### Writing in Your Own Words

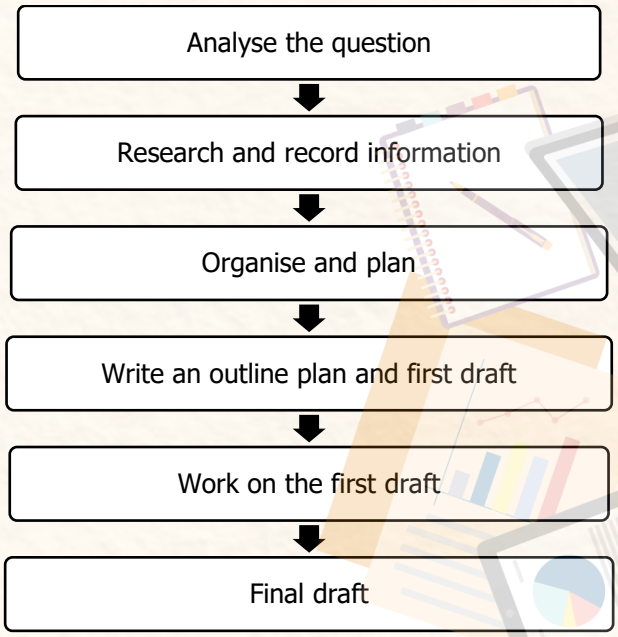
Preparing your writings or your findings based on your reading and your evidence into your own words whilst clearly acknowledging your sources is the key to avoiding plagiarism. There are several ways to include literature findings or research findings into writing:




In addition, academic writing also demonstrates arguments supported by evidence (assertions do not constitute an argument and your opinions are not evidence). It also requires authors to be critical to determine whether the evidence available justifies the conclusions that are drawn from it.

### Important Step-by-step Process in Academic Writing

There is no "right way" or "wrong way" to write. Writing can be a very messy and fluid process, however, with careful planning, writing can be made easier and efficient. The following is a representation of commonly used steps in academic writing.




**Reading Material**

**Do check out our webpage Research@HPUPM for additional important references and toolkits in academic writing, or click:**

https://hpupm.upm.edu.my/research_hpupm/research_toolkits_resources/academic_writing-59971

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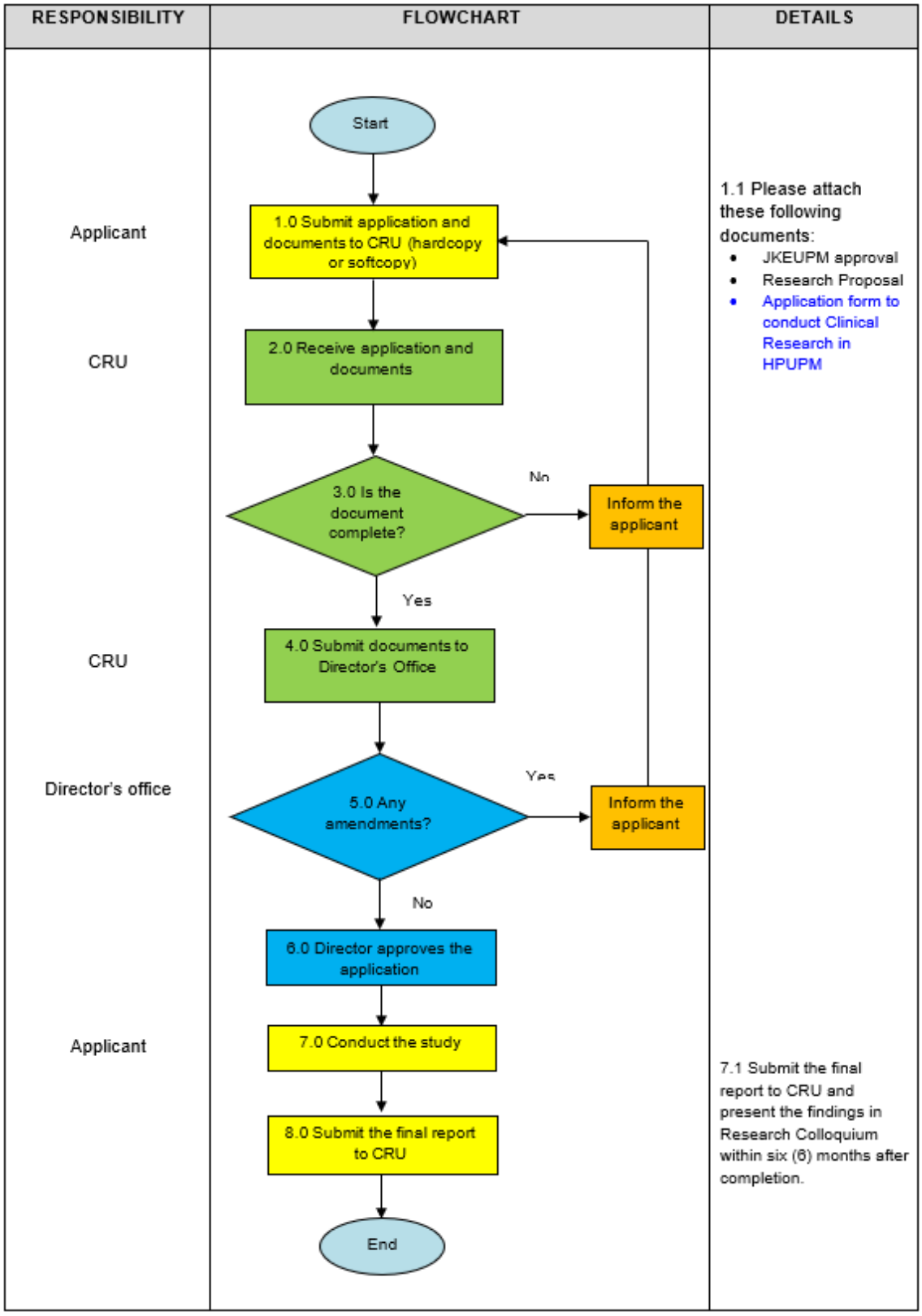
# ANNOUNCEMENTS!

1. Application to Conduct Non-experimental and Experimental Research in HPUPM
2. Survey of Training Topics by CRU
3. Structured training in Clinical Epidemiology and Research Methodology (CERM)
4. Meta-Journal Hour Series 6
5. Sample Size Determination Workshop
6. International Congress
   i. 7th World Conference on Research Integrity. Cape Town, South Africa
   ii. 9th International Congress on Peer Review and Scientific Publication, Chicago IL

# FLOWCHART OF APPLICATIONS FOR CONDUCTING NON -EXPERIMENTAL CLINICAL RESEARCH IN HPUPM

**TERMINOLOGY AND GLOSSARY:**

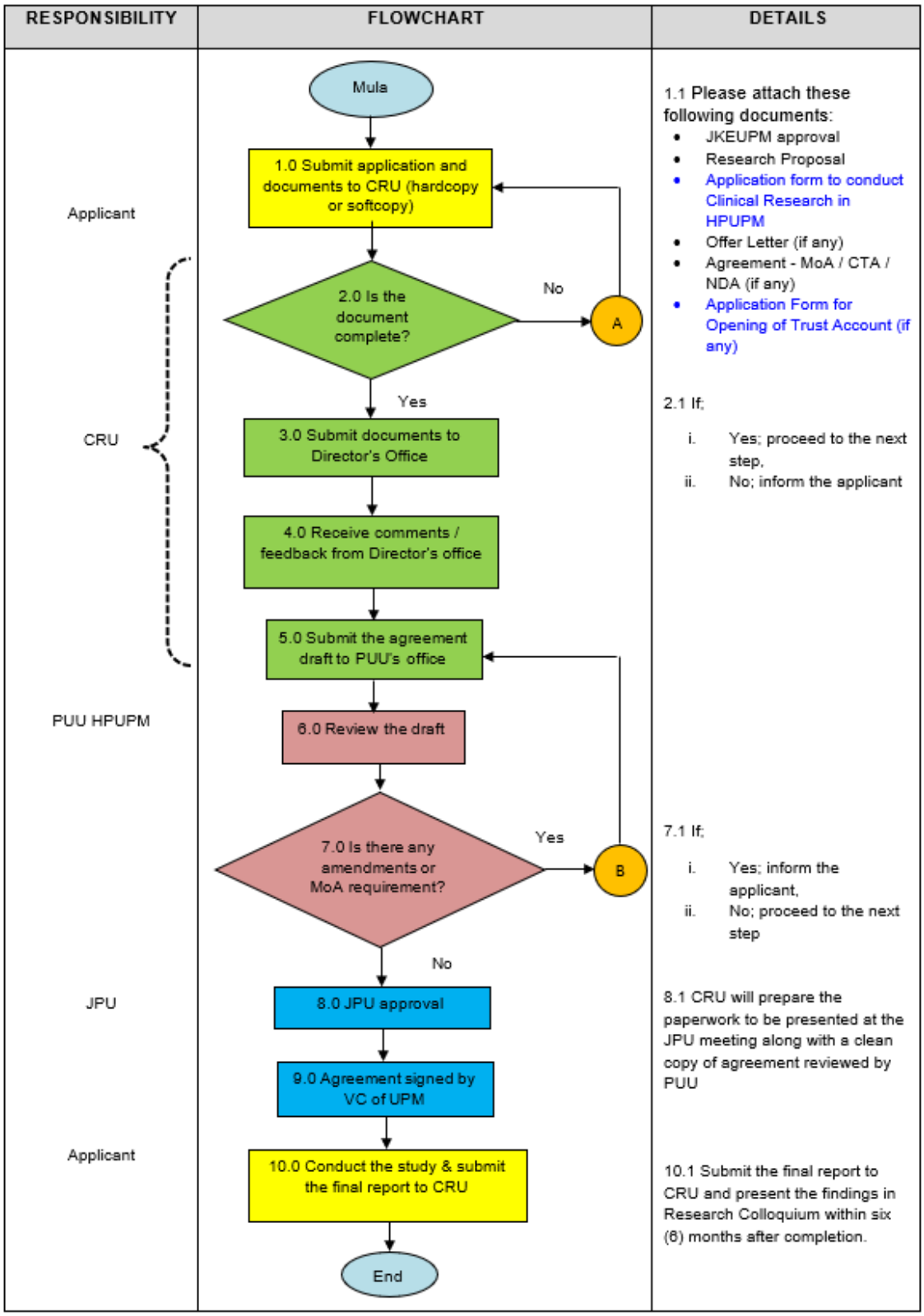
CRU – *Clinical Research Unit*
JKEUPM – Jawatankuasa Etika Universiti Putra Malaysia



# FLOWCHART OF APPLICATIONS FOR CONDUCTING EXPERIMENTAL CLINICAL RESEARCH IN HPUPM

**TERMINOLOGY AND GLOSSARY:**

CRU – *Clinical Research Unit*
JKEUPM - Jawatankuasa Etika UPM
PUU – Pegawai Undang-Undang
JPU – Jawatankuasa Pengurusan Universiti



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Returning?

# QUESTIONNAIRE ON CLINICIAN / ALLIED HEALTH NEEDS TO DO HIGH QUALITY RESEARCH

Assalamualaikum wbt dan good day.

Dear Prof./Assoc. Prof./Dr./Sir/Madam,

In Clinical Research Unit (CRU), we are always committed to help clinicians and allied health professionals to produce high quality research. We have identified potential webinar/ workshop/ services that can be beneficial in producing high quality research which are systematic review, statistical analysis skills as well as methodology of clinical research.

Therefore, it is much appreciated if you could help us to identify the webinar/workshop/services that you think most needed by you to assist you to conduct high quality research.

Thank you.

**Click to access link to survey: https://bit.ly/3EVr7Ug**

(Note: Please use UPM/HPUPM wifi to access the link.)

# Research Development Workshop

This training on research is for academicians, clinicians and health sciences professionals who want to 'go-now' on learning and conducting a proper and high-quality clinical, biomedical and health sciences research. It is on the whole research process and related areas, see attached topics on the table below. The speakers are AP Dr. Chew Boon How and invited experts who are excellent person for the topics.

Here, you may register your interest in participating or attending the training module. These are 2 slightly different trajectories. As PARTICIPANTS, you will go through everything including logging in your progress in a diary, conducting suggested activities and producing the outputs. As ATTENDEES, you will just attend all the sessions.

Any further query, you may contact Clinical Research Unit, HPUPM at 03-9769 9763 or email to cru_hpupm@upm.edu.my, copy your email to chewboonhow@upm.edu.my.

**Click to access link to survey:**

**https://forms.gle/mnjrZmdfCgddnuRP8**

# Research Development Workshop

By Boon-How Chew

This training on the key points and fundamentals of research is for academicians, clinicians and health sciences professionals who want to '**go-now**' on learning and conducting a proper and high-quality clinical, biomedical and health sciences research. It is on the whole research process and related areas, see attached topics on the table on the next page. The suggested workshop fee is MYR100 for HPUPM/FPSK staff, MYR200 for UPM staff, MYR500 for non-UPM individuals, and USD500 for non-Malaysians. The fees from the HPUPM/FPSK/UPM staff will be waived as a reward upon satisfactory completion of the training.

## PLANNING

- Reading materials: core and complementary lists (see further below)
- Diary of Progress
- Certificate of attendance or completion
- Workshop evaluation

## PREPARATION

- **Preparatory Work**: Participants to decide on professional interest or areas to pursue within own specialty. Then write 500 words essay to introduce and to argue for the topic on the current challenges and the possible future direction in (own) professional practice.

## IMPLEMENTATION

- **Duration**: 2 Days Workshops (5 slots of 3 hours) + 1 Day proposal presentation
- **Venue**: a hybrid of online and physical meetings
- **Secretariat**: pen or pencils, and colour papers, diary either as online or paper form. Print out the essay submitted by the participants earlier. This will initiate the research idea and topic during and from the workshop. Invite speakers from outside CRU. Organise pre-training meeting with all speakers. Conduct a survey on participants of their research experience:
    - Involvement in research as PI and co-investigator
    - Confidence in planning and conducting a research
    - Confidence in statistical analysis
    - Publication in journal as CA or co-author
    - Knowledge about journal publication process
    - Writing skills in Likert scale
- **Participant**: Laptop with applications and software essential for the research training. To build own research team for the proposed review article and research project. To hold at least ONE meeting each for the respective review and research before presentation of the study proposal.

## OUTPUT

**Output 1**: Write a complete study proposal & make a presentation
**Output 2**: Write mini narrative or review article.
**Output 3**: Completed peer reviews for at least one case-report and two original reports.

## RECOGNITION

**Certificate of Attendance**: Attended without any output
**Certificate of Completion**: Attended with 2 of 3 outputs

**Register your interest** and post your comment/request: https://forms.gle/mnjrZmdfCgddnuRP8

**Suggested Structure of the Training Module**

| **Day 1** | | |
|---|---|---|
| **Hour** | ***Talk /*** Topic | **Tent. Speaker** |
| 0800-0815 | ***REGISTRATION*** | |
| 0815-0830 | ***Introduction*** : Quality healthcare, research, KPI & career advancement | CBH & TDPA |
| 0830-0845 | ***Testimony I*** : Personal sharing by an outstanding researcher | TBD |
| 0845-0915 | ***Interactive talk 1***: Understanding the whole research process | CBH |
| 0915-1015 | ***Interactive talk 2***: Fundamental concepts of clinical epidemiology | CBH |
| 1015-1030 | ***Interactive talk 3***: Classification of epidemiologic research | CBH |
| ***BREAK*** | | |
| 1045-1115 | ***Interactive talk 4***: An introduction to qualitative study & designs | ***Invited speaker*** |
| 1115-1145 | ***Interactive talk 5***: Research question, literature review & conceptual framework | CBH |
| 1145-1215 | ***Interactive talk 6***: An introduction to databases & search strategies | CBH ***& an invited speaker*** |
| 1215-1245 | ***Interactive talk 7***: Theoretical design | CBH |
| 1245-1315 | ***Interactive talk 8***: Data collection design | CBH |
| ***LUNCH*** | | |
| 1400-1430 | ***Interactive talk 9***: Sample size estimation | CBH |
| 1430-1500 | ***Interactive talk 10***: Statistical design | CBH |
| 1500-1515 | ***Interactive talk 11***: Summary: clinical epidemiology & research methodology | CBH |
| 1515-1545 | ***Interactive talk 12***: Writing up a study proposal | CBH |
| 1545-1615 | ***Interactive talk 13***: Ethics clearance for a clinical study | ***Invited speaker*** |
| 1615-1645 | ***Interactive talk 14***: Funding opportunities | ***Invited speaker*** |
| ***BREAK & DISMISS*** | | |
| **Day 2** | | |
| 0800-0815 | ***REGISTRATION*** | |
| 0815-0915 | ***Interactive talk 15***: Statistical analysis | CBH |
| 0915-1000 | ***Interactive talk 16***: Comprehensive reporting, quality writing | CBH |
| 1000-1030 | ***Interactive talk 17:*** Publication process | CBH |
| ***BREAK*** | | |
| 1045-1245 | ***Interactive talk 18***: Sistem PRiMS (Putra Research & Innovation Management System) and UPM IP Putra Science Park | ***Invited speaker*** |
| ***LUNCH*** | | |
| 1400-1500 | ***Interactive talk 19***: What is evidence-based practice? Appraise the evidence: primary research and systematic reviews & meta-analysis | CBH |
| 1500-1530 | ***Interactive talk 20***: Summary: a suggested roadmap for clinicians to higher quality in research and publication | CBH |
| 1530-1545 | ***Testimony II***: Personal sharing by an outstanding researcher | TBD |
| 1545-1630 | ***Closure***: Summary & What have you learned?<br>***Q & A*** | CBH |
| ***BREAK & DISMISS*** | | |

| **Day 3 after 2-3 months post-workshop** | | **Facilitator** |
|---|---|---|
| 0800-0815 | ***REGISTRATION & Intro*** | |
| 0830-1230 | Study proposal presentation | CBH |

**Reading Materials**

**Core List**


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**Complementary List**


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CLINICAL RESEARCH UNIT PRESENTS

# META-JOURNAL HOUR

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# TENTATIVE PROGRAM

| Time | Title | Speaker* |
|---|---|---|
| 0830-0915 | Determination of a minimum required sample size: Concept and application | SHN |
| 0915-1000 | Sample size determination in interventional studies | SHN |
| 1000-1015 | **Break** | |
| 1015-1100 | Sample size determination in observational descriptive studies | SHN |
| 1100-1145 | Sample size determination in observational analytical studies | SHN |
| 1145-1230 | Sample size determination using risk estimates | SHN |
| 1230-1300 | Tips and tricks, dos and don'ts in sample size determination | SHN |
| 1300 -1430 | **Lunch and prayers** | |
| 1430-1500 | Sample size for common statistical tests (correlation, Cronbach's alpha) | MAB |
| 1500-1600 | Sample size using rule of thumb - for multivariate statistical tests | MAB |
| 1600- 1630 | Summary of the process on sample size calculation & estimation | MAB |
| 1630-1700 | Open Forum / Question and Answer | SHN<br>MAB |

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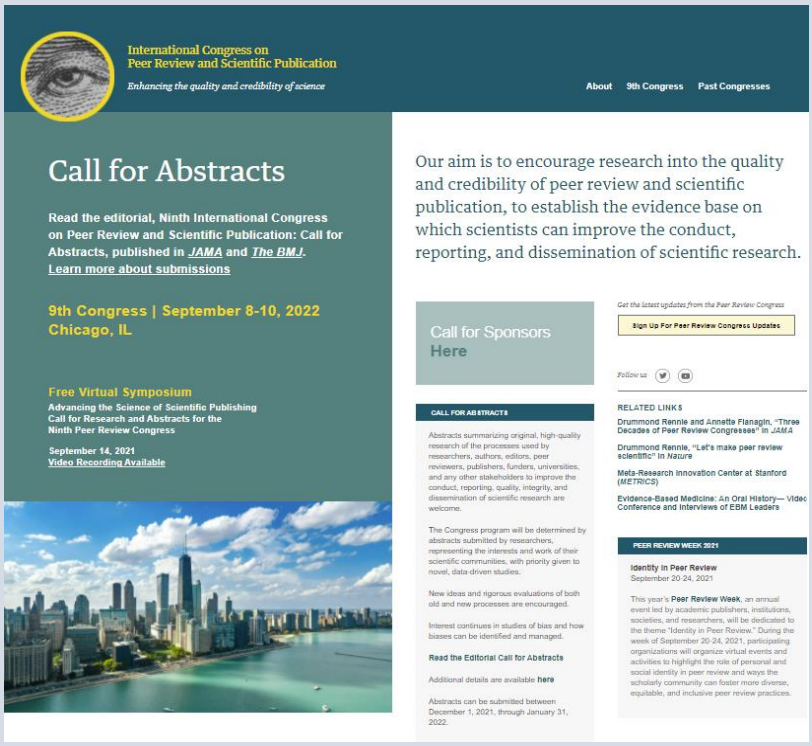
Editorial on September 20, 2021. John P. A. Ioannidis et al. Ninth International Congress on Peer Review and Scientific Publication Call for Abstracts. JAMA. 2021;326(13):1265-1267. doi: https://doi.org/10.1001/jama.2021.16596.

9th International Congress on Peer Review and Scientific Publication. September 8-10, 2022
Chicago, IL. Click to register: https://peerreviewcongress.org/




Editorials published 20 September 2021. John P. A. Ioannidis et al. Ninth international congress on peer review and scientific publication—call for abstracts. BMJ 2021;374:n2252. doi: https://doi.org/10.1136/bmj.n2252.