



How to Think of a Research Question?

7

The art and science of asking questions is the source of all knowledge

—Thomas Berger, American Novelist (1924–2014)

7.1 What Is a Research Question?

A research question is the central theme of a scientific experiment around which everything revolves. It is a probing statement for which an answer is required. If the research question is not clear at the beginning the whole research becomes questionable and doubtful. Thus, formulating a question is the critical step towards biomedical research [1]. The research question is a signpost that indicates the direction of a study [2] and is based on the gaps in our knowledge.

7.2 What Are the FINER Criteria?

FINER is an acronym which help us to formulate a good research question [3]. Its expanded form is given below:

F—Feasible

- It is a technique that is possible to use.
- There are enough patients with this illness.
- Financially the project is possible.
- The outcome can be measured.
- The sample size will not be a problem.
- The scope of the study is not too vast.

I—Interesting

- Getting the answer to the study will be intriguing.
- The study is of interest to your peers.
- It may interest the funding agencies.
- Will help your community.

N—Novel

- The study confirms previously done results.
- Disproves earlier studies.
- Is an extension of previously done experiments.

E—Ethical

- The study complies with the Institutional Review Board's requirements.
- It safeguards the interests of patients.
- There is confidentiality and anonymity of the participants.
- There will be benefits from this study?
- The risk is minimal?

R—Relevant

- It will be useful in day-to-day practice.
- It will be useful for patient care.
- It will be useful to formulate health care policy.

7.3 Some Consider the FINER 'MAPS' to Be a More Complete Acronym. What Does MAPS Stand For?

The word MAPS stand for:

- **M**—Manageable
- **A**—Appropriate
- **P**—Publishable
- **S**—Systematic

7.4 How Do We Break Down a Research Question?

PICOT is the commonest method used to do this into five components [4]:

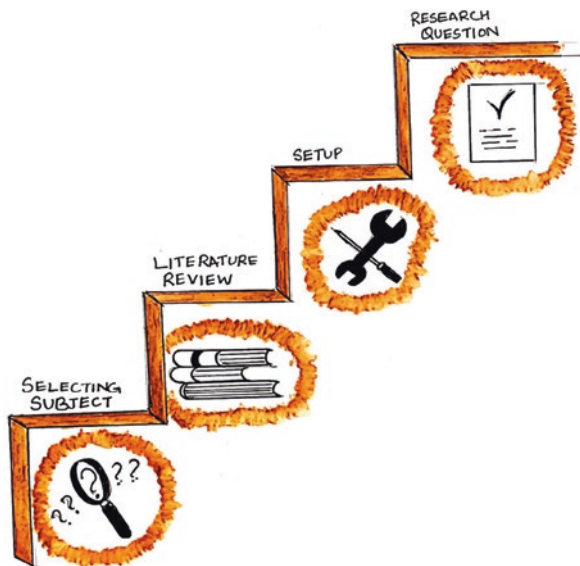
- **P**—Population/disease (i.e., age, gender, ethnicity, with a certain disorder).
- **I**—Intervention or variable of interest (exposure to a disease, risk behaviour, prognostic factors).
- **C**—Comparison (could be a placebo or business as usual as in no disease, absence of risk factor, prognostic factor).

- O—Outcome (risk of disease, the accuracy of a diagnosis, rate of occurrence of an adverse outcome).
- T—Time it takes to demonstrate an outcome (for how long were the participants observed?).

An example of a research question is given to the understanding of a concept. Supposing you are planning to do research on *The role of hydroxychloroquine in preventing COVID-19 in health care workers*. We will need to break down this into various components:

- Population—Health care worker
- Intervention—Hydroxychloroquine 400 mg once a week
- Comparison—Health care workers who receive placebo
- Outcome—Health care workers who eventually develop COVID-19
- Time—6 weeks.

The research question should be framed in a question format. In the above example, it should be ‘Can hydroxychloroquine (400 mg) administered once weekly for 6 weeks protect health care workers against COVID-19 infection?’



7.5 What Are the Steps for Framing a Research Question?

The basic steps for formulating a research question are given below [5]:

Step-1	Choose an interesting subject, the topic should be broad e.g. Type I Diabetes Mellitus
Step-2	Do some preliminary literature search from recent journals - what is known and what is not known?
Step-3	Narrow down the search – what is possible in your setup?
Step-4	<p style="text-align: center;">Before you begin reframe in the PICOT form</p> <p style="text-align: center;">Population – type 1 diabetics</p> <p style="text-align: center;">Intervention – metformin</p> <p style="text-align: center;">Comparison – with metformin or without metformin</p> <p style="text-align: center;">Outcome – blood sugar fasting /pp/ HbA1C</p> <p style="text-align: center;">Time – at what interval e.g. 3months</p> <p style="text-align: center;">Reframe – What is the effect of Metformin on HbA1C in Type 1 DIABETES after 3 months of use?</p>

7.6 What Are the Examples of Bad Research Questions?

A bad research question is often not in the PICOT format and has missing information. Table 7.1 describes few research question which are incomplete and how to formulated the suggested questions.

Table 7.1 Examples of bad research questions

Research	Missing information	Suggested question
Study of Telemedicine during the lock down period	It is just a statement, there is no question	What is the patient satisfaction after a telemedicine consultation during the lockdown period?
Does consumption of cinnamon help in lowering lipids?	How much cinnamon? At what interval is a repeat study planned and on which subjects?	Is the lipid profile altered after the consumption of cinnamon powder 3 gm per day for 2 months in non-diabetic subjects?
Clinico-pathological study of small intestinal tumours	Bad research, there is no question	Are the clinico-pathological characteristics of small intestine tumours different in India and western countries?
Are artificial sweeteners good for health?	A more specific question is required	What is the effect of Stevia, an artificial sweeter, on men who have recurrent migraine?

7.7 Conclusions

- A good question is the backbone of research and any further steps should be initiated after formulating this.
- The acronym “FINER/MAPS suggests how a research question should be assessed.
- The research question should be written in the PICOT format for easy understanding.

References

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