Research Unit, BIRDEM Dec 2016

Research Methodology and Scientific Writing Workshop

gvbRv‡i kvgxg, GbvUwg wefvM, weGmGgGgBD

Handout/notes on

Introduction to Research

ïiiK_v

GB handout/notes ˆZwi n‡q‡Q
GKwU presentation-Gi mnMvgx wn‡m‡e|

GLv‡b gj presentation-Gi slide-¸‡jv Qvovl
K‡qKwU evowZ ‘slide’ †`qv n‡q‡Q;
Avevi gj presentation-Gi GKwaK slides-‡K
GKwU ‘slide’-GI †`Lv‡bv n‡q‡Q|

G Qvov gj presentation-G
animation-Gi gva¨‡g
GKB slide-G hv †`Lv‡bv n‡q‡Q

Zv GB handout/notes-G GKwaK ‘slide’-G
A_ev GKB ‘slide’-G wfbfv‡e mvwR‡q
†`Lv‡bv n‡q‡Q|

ZvB GB handout/notes †`L‡j
g‡b n‡Z cv‡i †h

me RvqMvq
size, composition BZ¨vw` e¨vcv‡i
PowerPoint presentaion-Gi principles
AbmiY Kiv nqwb |
†hgb, GK slide-G A‡bK †jLv †`qv n‡q‡Q|

ïiæi K_v

Explanatory GB handout/notes
evsjvq Kiv n‡jv

research terms
Ges †mB msµvšÍ Av‡jvPbvi m‡½

readers-Gi `iZ Kgv‡bvi j‡ÿ¨|

Zv n‡j presentation-G Avmv hvK:

ïiæi K_v

Ogv_vq KZ ck Av‡m
w`‡”Q bv †KD Reve Zvi Ó

- mKgvi ivq

Manzare Shamim

ïiæi K_v

বাচ্চাটাকে কি বিদেশে পাঠাব?

kvjx-i we‡q‡Z cvÄwe cie, bv wK m¨U?

মেডিক্যাল শিক্ষা কি ধসে পড়ছে?

বাবার এই অসুখটা কোত্থেকে এল ?

কোন দোকানের রসগোলস্না ভালো?

mvg‡bi w`b¸‡jv‡Z †`‡k Kx n‡Z hv‡”Q?

আমাকে কেউ বোঝে না কেন?

Cerebral malaria-য় আক্রান্তদের treatment outcome কেমন ?

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ïiæi K_v

Surgical procedures

‘A’ আর ‘B’-এর মধ্যে কোনটা বেশি কার্যকর?

চাকরিটা কি ছাড়ব?

cw_ex‡Z kwš Í Av‡m bv †Kb?

বাংলাদেশে IHD-এর জন্য সবচেয়ে

vulnerable population group কোনটা?

রবীন্দ্রসঙ্গীত কি প্রাণ হারাচ্ছে?

Research Methodology

Workshop-এ গিয়ে লাভ হবে কি?

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ïiæi K_v

GLb GKU fwe ‡Zv,
GB me c‡ki †Kv‡bvUvi Reve †c‡Z
Avgiv †KD KL‡bv †Kv‡bv M‡elYv K‡iwQ wK bv|

- Avcwb †Kb g‡b Ki‡Qb †h n¨v, G¸‡jvi Rb¨ M‡elYv K‡i‡Qb?

- Avi Avcbvi †Kb g‡b n‡”Q †h bv, I¸‡jv M‡elYv nq wb?

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ïiæi K_v

Zv n‡j

M‡elYv ej‡Z Avgiv Kx ewS?

গবেষনা

গবেষ্ = অন্বেষণ

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RESEARCH:

An

organised

& systematic

activity

for finding answers to questions

A_vr

M‡elK †K eS‡Z n‡e †h:

†h †Kv‡bv M‡elYvq c‡ki DËi LR‡Z

¸wQ‡q (organised way-‡Z) G‡Mv‡Z nq-

†KvbUv Av‡M, †KvbUv c‡i

†mB sequence wVK †i‡L,

Ges Dch³ system AbmiY K‡i|

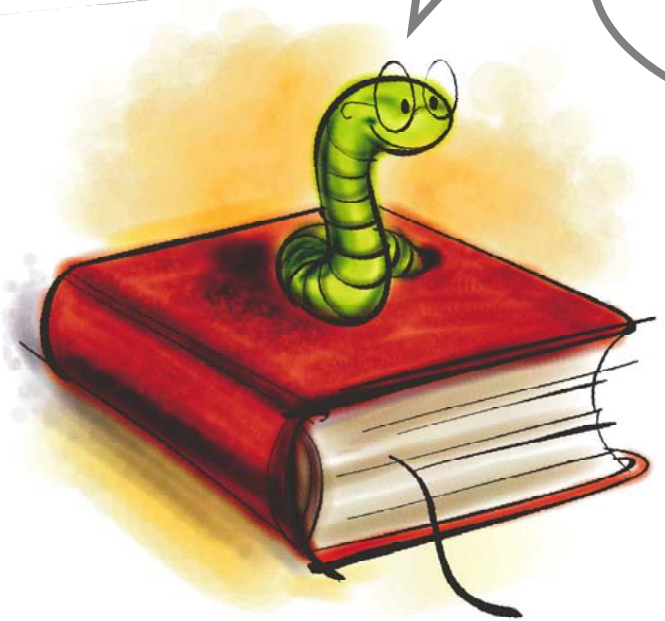
Z‡eB †mUv ÕM‡elYvÕ wn‡m‡e cwiMwYZ nq|

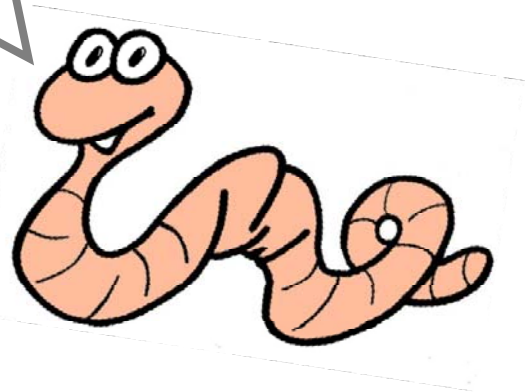
wKš GKUv K_v.....

M‡elYv Kx

Av”Qv, wimvP Ki‡Z
†Kgb †mÝ-Gi
`iKvi nq †i?

Kgb †mÝ-Gi





Manzare Shamim (text)

ÔeB‡qi-‡cvKvÕ-i c‡ki Rev‡e
practical †evam¤úb cvYxwU hv ej‡Q
Zv-B GKRb M‡el‡Ki Pwjkvkw³-
†mB common sense.

GB organised & systematic approach
Avi common sense wb‡qB
Avgvi AvR‡Ki presentation.

M‡el Yv Kx: wbR¯ ‡bvU

আজকে যেসব বিষয়ে আলাপ করব

- Research এবং research design-এর basic concepts এবং steps
- Research topic, research problem, research question, hypothesis এবং research objective
- Research সম্পর্কিত কিছু শব্দ বা jargons

Jargon

gv‡b n‡jv †Kv‡bv we‡kl †ÿ‡Î we‡kl A_enbKvix kã|

Bs‡iwR †ek wKQ
mvaviY fv‡e e¨eüZ kã Av‡Q,
research-G †h¸‡jvi A_ LeB wbw`ó-
mvaviY e¨envi †_‡K wKQUv ev A‡bKUvB wfb|

‘Population’, ‘variable’, ‘significant’
- G¸‡jv GiKg research jargon-Gi D`vniY|

Research কেন করা হয়?

- নতুন facts discover করা বা পুরনো facts verify এবং test করার জন্য

- Existing facts সংক্রান্ত কোনো question-এর উত্তর,
  কোনো phenomenon-এর ব্যাখ্যা

  বা কোনো problem-এর সমাধান খোঁজার জন্য

- নতুন কোনো scientific theories, concepts বা tools develop করার জন্য

Research †Kb Kiv nq

q‡b ivLv `iKvi:

Health Research

looks for evidence for better

diagnoses & treatments, policies & decisions

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Research †Kb Kiv nq

গবেষনা n‡jv:

Investigation of the PAST

Involvement in the PRESENT

Contribution to the FUTURE

-Gi GKUv mgšq

Research †Kb Kiv nq

Z‡e
Gi Rb¨ c‡qvRb
weÁvbgb¯‹Zvi |

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Research †Kb Kiv nq

M‡el‡Ki g‡bi weÁvbgwLZvB n‡jv
M‡elYvi cvY|

ck ïb‡Z ev ck Ki‡Z fq †c‡j
weÁvbx nIqv hvq bv|
weÁvbxi †fZ‡i wkïi g‡Zv

GKwU ckKvZi cvY

m`vRvMZ _v‡K|
Zv-B Zv‡K cwiPwjZ K‡i|

wZwb wb‡Ri cwZwU wm×vš Í‡KI ck K‡i K‡i
wb‡RB wb‡R‡K †cwi‡q †h‡Z _v‡Kb|

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Research †Kb Kiv nq

Awg g‡b Kwi...
Awg wekvm Kwi...

cgvY Kx?

weÁvb ZvB me K viB cgvY †Lv‡R|

Zvi mv‡a¨i g‡a¨ GB gnZ chš Í
Rvbvi-†evSvi †h m¤ú` i‡q‡Q
†mwU‡K e¨envi K‡i hZUK cgvY †m D×vi Ki‡Z cv‡i-
ZZUK‡ZB Zvi Av¯v|

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Research †Kb Kiv nq

wb‡R‡K hw` ck Kwi-
ÔAvwg wK GKRb weÁvbgb¯‹ gvbI?Õ
DËi cvB- ÔAek¨BÕ|

wKš scientific-minded nIqvUv
GKU KwVbB e‡U|
Scientific-minded n‡Z n‡j
Avgv‡K Aek¨B scientific methods
AbmiY Ki‡Z n‡e,
Avi Zv Ki‡Z n‡j Avgv‡K eS‡Z n‡e,
scientific methods-G wfwË¸‡jv Kx Kx|

Research †Kb Kiv nq: wbR¯ †bvU

Scientific methods-Gi wfwË

- **Reliance on empirical evidence**
- **Use of relevant concepts**
- **Commitment of objectivity**
- **Ethical neutrality**
- **Generalisation**
- **Verifiability**
- **Logical reasoning process**

- **Reliance on empirical evidence**

†Kv‡bv research-Gi †h †Kv‡bv ¯Í‡i
(†hgb research findings-Gi interpretation-G)
weÁvb Av¯v iv‡L
observation ev experiment-Gi gva¨‡g cvIqv
evidence-Gi Ici-

†Kv‡bv Av›`vR-Gi Ici bq|

- **Use of relevant concepts**

†Kv‡bv event, phenomenon,
measurement, characteristic
BZ¨vw` e¨vL¨v Ki‡Z weÁvb e¨envi K‡i
ïiagvÎ †mUvi m‡½ m¤ú³ Zv Av‡Q Ggb concept-Gi|

†hgb, †Kv‡bv GKUv indigenous drug-Gi
hypoglycaemic property e¨vL¨v Ki‡Z weÁvb mvnvh¨ ‡b‡e
G e¨vcv‡i †hme established concept Av‡Q †mM‡jvi:

insulin level Kx Kx fv‡e evo‡Z cv‡i,
insulin †Kv_vq Kx Kx fv‡e KvR Ki‡Z cv‡i BZ¨vw`i|

- **Commitment of objectivity**

weÁvb †Kv‡bv wKQi e¨vL¨vq subjectivity-‡K
(A_vr e¨w³MZ cQ›`-AcQ‡›`i ev a¨vb-avivYvi Av‡jv‡K
†h variation,Zv‡K) `‡i ivL‡Z Pvq|
weÁvb Ggb e¨vL¨vq †h‡Z Pvq,
hv mevi Kv‡Q GKB iKgfv‡e MnY‡hvM¨ nevi g‡Zv|

†hgb, †Kv‡bv GKwU drug-Gi †ÿ‡Î
kidney-msµvšÍ RwUjZv wb‡q gšÍe¨ Ki‡Z weÁvb
drug-wUi †Kv‡bv dose-G nephrotoxicity MnY‡hvM¨fv‡e
established n‡q _vK‡j,
†mUv a‡iB c_‡g G‡Mv‡Z PvB‡e|

- **Ethical neutrality**

Research-Gi conclusions

actual data †_‡K derived findings-Gi
m‡Z¨i Ic‡I cwZwôZ n‡e|

Neutrality PwPZ n‡e|

Ethics-Gi e¨vcvi ¸‡jv

workshop-Gi Ab¨ session-G

Av‡iv detail-G Av‡jvPZ n‡e|

- **Generalisation**

weÁvb Pvq, GKvwaK evidence-Gi wfwË‡Z
†Kv‡bv GKUv rule `vo Kiv‡Z
hv wfb wfb mg‡q, wfb wfb situation-G
wKsev wfb wfb ‡ÿ‡Î c‡hvR¨ n‡Z cv‡i-
A_vr generalised n‡Z cv‡i|

Research-Gi †ÿ‡Î, ZvB, GKUv sample †_‡K hw` Ggb information bv cvIqv hvq hv GKUv population-Gi Rb¨ generalise Kiv hv‡e, Zv n‡j †mB research-Uv‡K mdj ejv hvq bv|

- **Verifiability**

  weÁvb Pvq, ¯”Q n‡Z, Db¥³ n‡Z|
  Awg hv eje, Zv c‡iv scientific community-i
  Kv‡Q open-to-criticism,
  open-to-verification _vK‡e|

  GKUv research-‡K Awg Ggbfv‡e Dc¯wcZ Kie
  hv‡Z K‡I †KD PvB‡j H research-wU replicate K‡i
  Avgvi findings verify Ki‡Z cv‡ib|

- **Logical reasoning process**

†Kv‡bv event, phenomenon
ev Ab¨ †Kv‡bv finding-Gi KviY LR‡Z
weÁvb hw³ a‡i G‡Mv‡Z Pvq |

†hqb:
†h‡nZ AgK Mæ‡ci mouse-G
neurone-Gi neurofilament-Gi tangled form
significantly higher proportion-G cvIqv †M‡Q,
ZvB avivYv Kiv hvq †h H Mæ‡c neuronal conduction
Ab¨ Mæ‡ci Zjbvq D‡jøL‡hvM¨ nv‡i e¨vnZ n‡q _vK‡Z cv‡i|

Scientific methods-Gi wfwË: : wbR¯ †bvU

Scientific methods-Gi wfwË: : wbR¯ †bvU

Research-G Kx Kiv nq

Research ïagvÎ †mUvB, †hLv‡b

there is a
contribution to new knowledge.

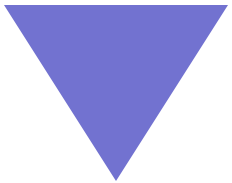
GB ‘new’-Uv
G‡Kev‡i Pg‡K-†`Iqv bZb wKQ bv-I n‡Z cv‡i|

Z‡e ci‡bv established ‡Kv‡bv welq n‡e bv
(hw` bv Zv‡K verify Kivi
†Kv‡bv †hŠw³K KviY _v‡K)|

আরো practically বলতে গেলে,

একটি research-এ আমরা

GB KvR ¸‡jvi g‡a¨
GK ev GKwaKUv K‡i _vwK



Research-G Kx Kiv nq

- †Kv‡bv wKQ measure, estimate ev count Kwi

  †hgb: - Blood pressure (measurement),
  - Serum glucose (estimation)
  - No. of teeth with caries (counting)

- একাধিক জিনিস বা ঘটনা বা phenomenon (অর্থাৎ variable)-এর মধ্যে association (relationship) খুঁজি

  †hgb: Ischaemic heart disease (IHD)
  and a particular food habit in a community

- কোনো একটা ব্যাপার evaluate করি

  †hgb: - Impact of an immunisation programme,
  - Effectiveness of a teachers' training

ï i‡ZB fve‡Z nq:

Research-G Kx Kiv nq

†Kb

Kx wb‡q

†Kv_vq

Kx fv‡e

KLb

Kvi/wK‡mi Ic‡i

Kvi mv‡_

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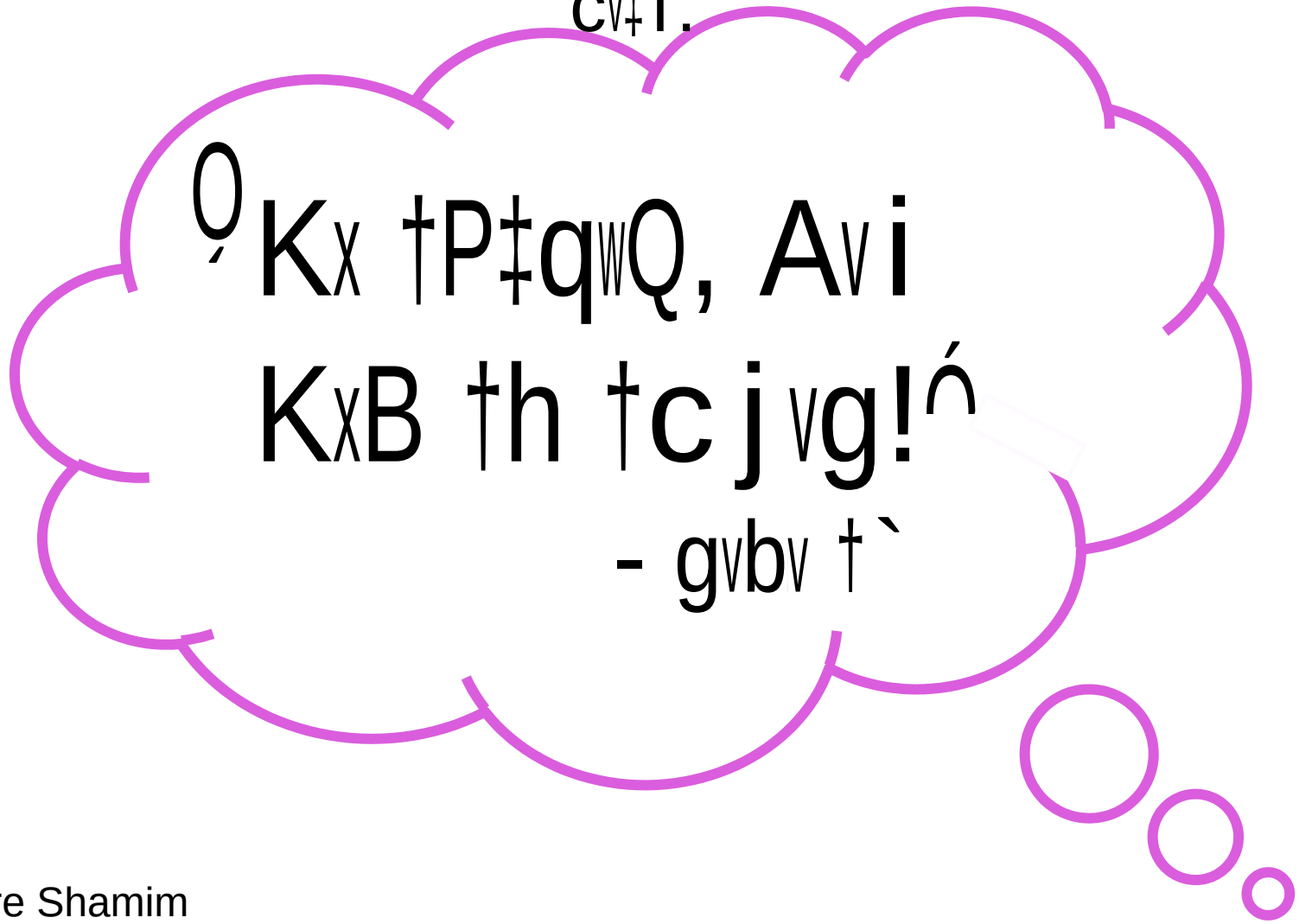
†f‡e-wP‡šÍ e¨e¯v bv wb‡j Ggb Ae¯v n‡Z cv‡i:



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Research-G Kx Kiv nq: wbR¯ tbvU

Research- এর ধাপগুলো কী কী?

A. Planning

B. Implementation / data collection

C. Data management and analysis

D. Report writing

E. Dissemination of research findings

Research planning-Gi avc¸‡jv †gvUvgwU GiKg:

1. **Selecting the research field**
2. **Selecting the research topic**
3. **Identifying the research problem**
4. **Building knowledge about the problem**
5. **Stating the research problem**
6. **Stating the research question(s), research hypothesis/hypotheses and research objective(s)**

(Continued)

(Continued)

6. **Deciding on study population(s), sample size(s) and sampling technique(s)**

7. **Deciding on study design**

8. **Deciding on data collection plan**

9. **dSelecting/eveloping data collection instruments; e.g., questionnaire, checklist, data sheet etc.**

10. **Writing a research protocol (without a budget) or a research proposal (with a budget for seeking funding)**

Research-Gi avc

The thinker

by Rodin

GwU dv‡Ýi weL¨vZ fv¯‹i
i`v-i Kiv GKwU fv¯‹h|

GwU AšÍZ cwð‡g
wPšÍvkxj gvb‡li
GKwU icon-G cwiYZ n‡q‡Q|

Awaq GwU evievi
Avgvi presentation-G
e¨envi K‡iwQ|

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Research-Gi †¶‡Î

av‡c av‡c

organised-fv‡e

G‡Mv‡bvi cwµqvUv GiKg:

(g‡b ivL‡Z n‡e †h Óevsjv`‡k GB M‡elYv Av‡M nqwbÓ, ïa GUvB M‡elYvwUi c‡¶ GKgvÎ hw³ n‡Z cv‡i bv|

Genetic, environmental ev Ab¨vb¨ Kvi‡Y evsjv‡`‡ki †Kv‡bv population-Gi Ic‡i ‡Kv‡bv M‡elYvq Ab¨ ‡`‡ki Zjbvq wfb iKg dj cvevi m¤vebv Av‡Q wK bv ‡mUvB we‡eP¨|)

Research-Gi avc

আচ্ছা, কোন field-এ
কাজ করা যায়....

এই field-এ
কোন topic-এর ওপর
কাজ করা যায়....

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একটা ভালো research topic বলতে কী বুঝব?

নিজেকে প্রশ্ন করুন- এই topic-এর ওপরে:

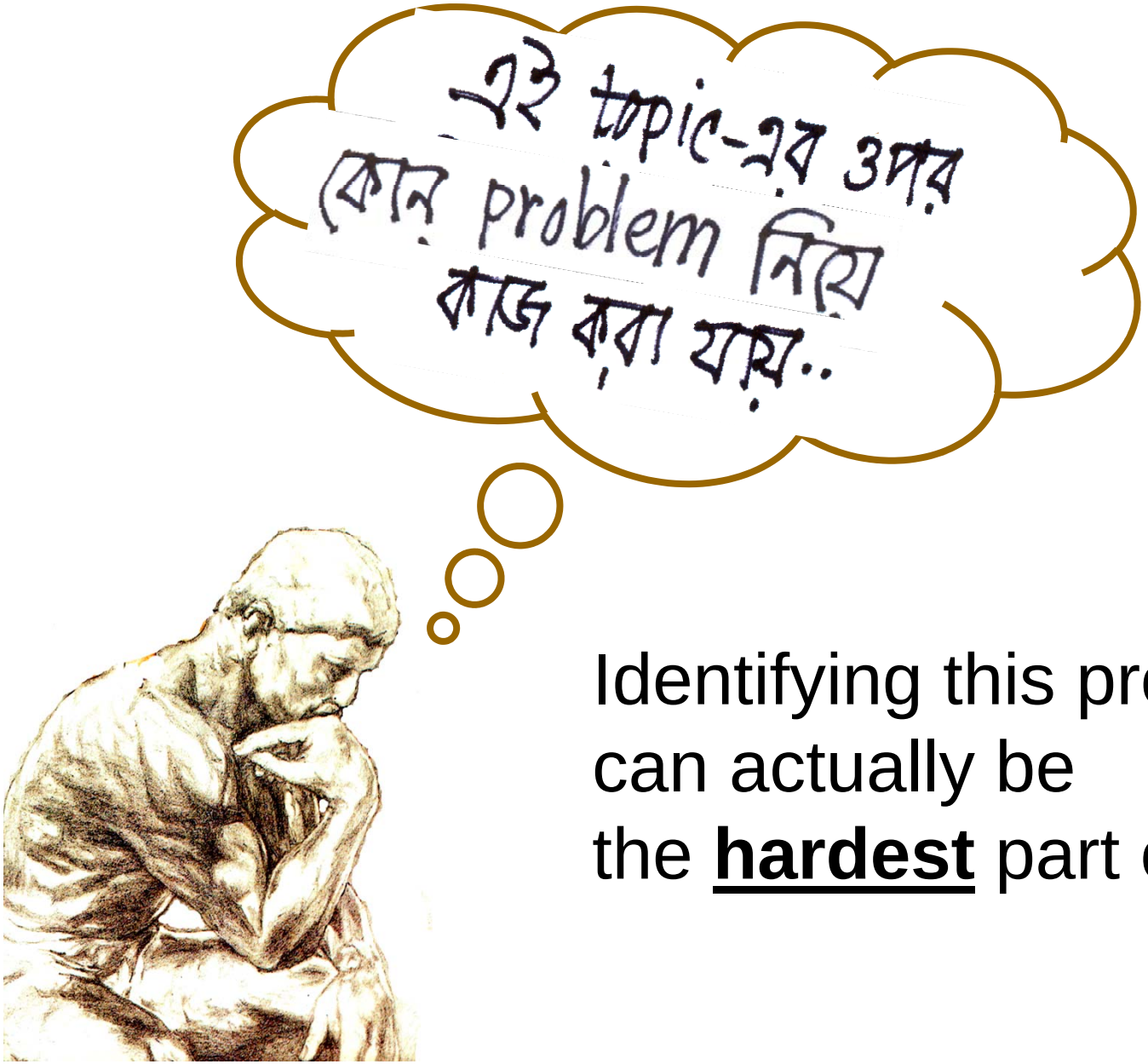
?

- কাজ করা কি দরকার?
- কাজ করা কি সম্ভব?
- কাজ-এর কি কোনো practical application আছে?
- কাজ কি ethically acceptable?

একটা ভালো research topic

- needed
- feasible
- applicable
- ethical

From research topic to research problem



Identifying this problem
can actually be
the **hardest** part of research

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Research problem

is a statement about

- **an area of concern,**
- **a condition to be improved upon,**
- **a difficulty to be eliminated, or**
- **a troubling question**

that exists in scholarly literature,

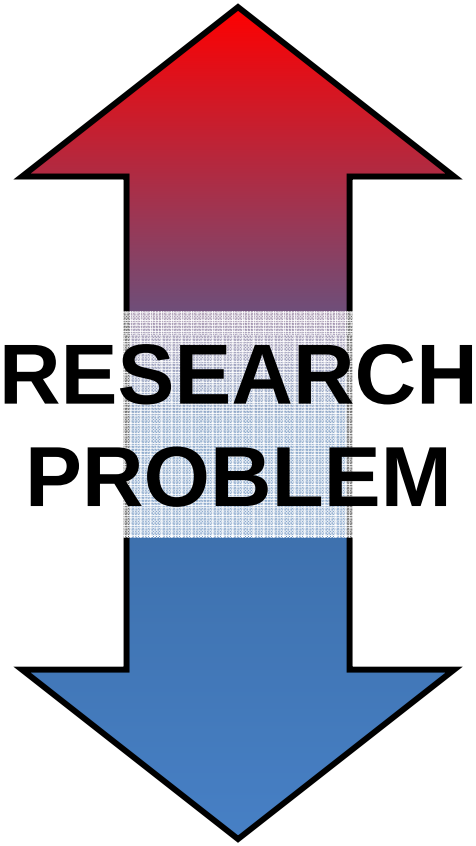
- **in theory, or**
- **in practice,**

that points to the need for

- **meaningful understanding, and**
- **deliberate investigation.**

libguides.usc.edu/writingguide/introduction/researchproblem

What exists



What should be

Modified from libguides.usc.edu/writingguide/introduction/researchproblem

Research problem-G †hme wRwbm _vK‡Z n‡e:

1. **Magnitude of the problem**
2. **Basis of selecting the problem (rationale)**
3. **Present state of knowledge**
4. **Gaps in knowledge**
5. **What to be done and why**
6. **What new information will be produced**
7. **How it will contribute to solve the problem**

GKUv †v‡jv research problem nIqv DwPZ:

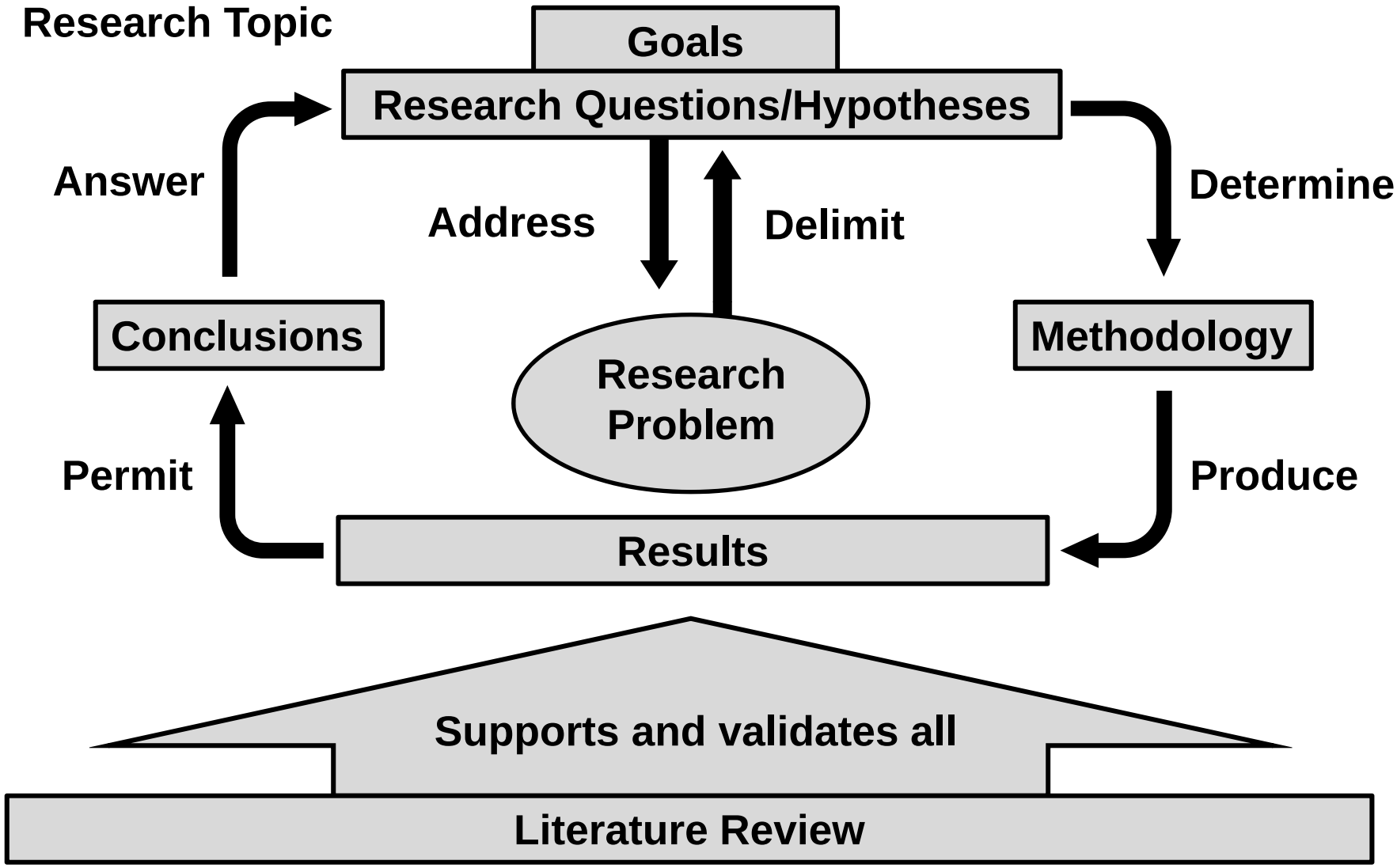
- **Important (convincing)**
- **Feasible**
- **Timely**
- **Relevant**
- **Ethical**
- **Prioritised**

Av‡Mi slide `Õ‡Uv‡Z
research problem-Gi K‡qKUv w`K
†`Lv‡bv n‡q‡Q|

c‡ii slide-G
m¤úY research perspective-G
research problem-Gi
Ae¯vb †evSv‡bv n‡q‡Q|

Problem-based research cycle

Research problem



scis.nova.edu/~ellist/ProblemDirectedResearch.pd

Problem identify করব কী করে?

- বারবার একটা কিছু ঘটছে

  †hgb: Delayed healing after a specific surgical procedure

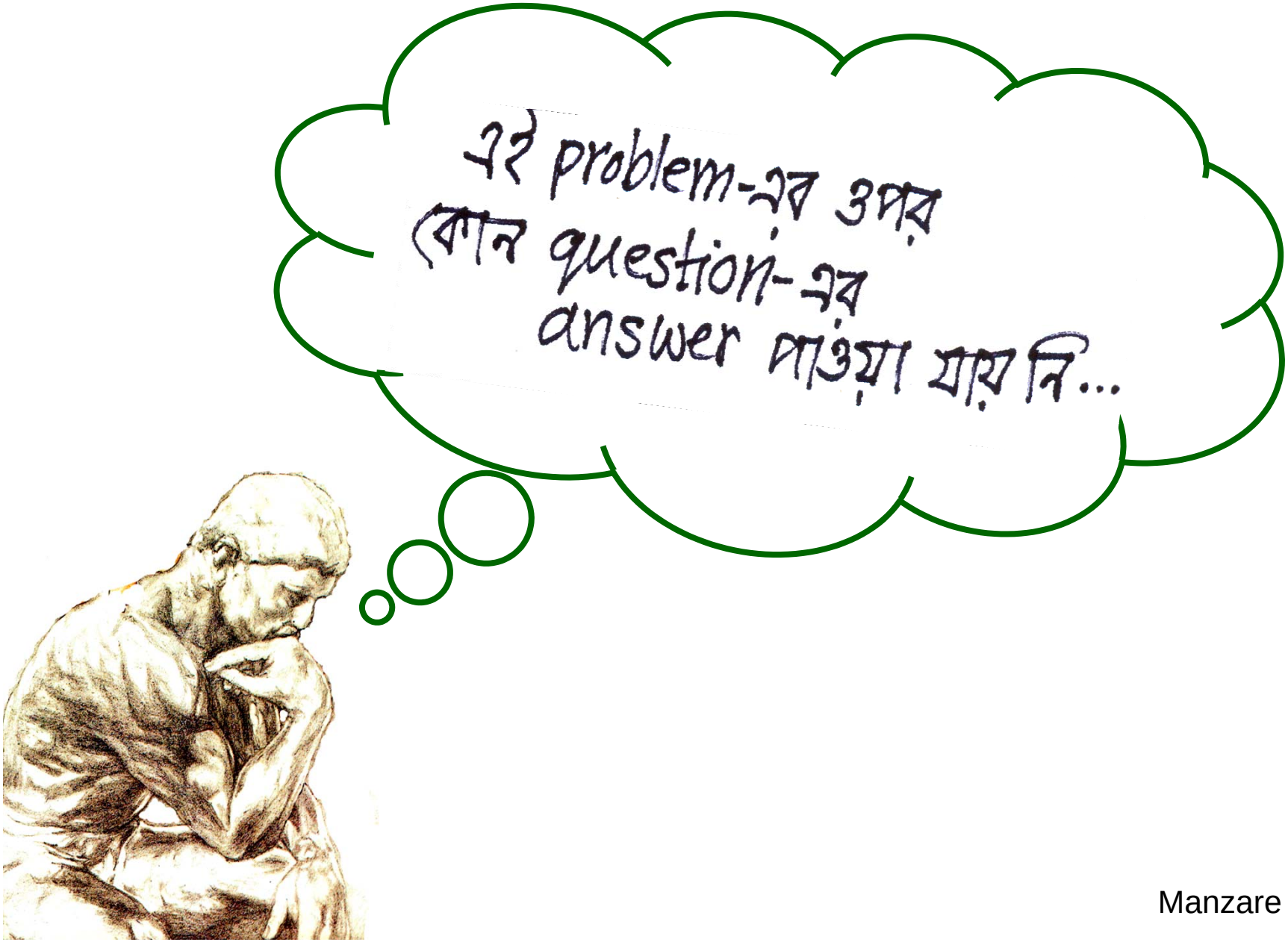
- হঠাৎ একটা কিছু ঘটলো যার ˙e¨vL¨v cvIqv hv‡”Q bv

  †hgb: Increased incidence of suicides in a community

- কেউ কোনো একটা problem তুলে ধরেছেন
  বা আগের এক বা একাধিক study থেকে কোন ধারণা তৈরী হয়েছে

  †hgb: Some indigenous drug may reduce
  serum cholesterol

From research problem to research question



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Research problem: wbR¯ †bvU

Research question কী জিনিস?

Research-G
‡h question-Gi DËi fÏ¨vRv n‡e ev n‡q‡Q

Research question → **Answer or conclusion**

Writing a question properly means half the answer found.

Research question

aiv hvK,

Avcwb Avcbvi research-G †h c‡ki DËi Pvb Zv n‡jv drug ‘A’Ges drug ‘B’-Gi g‡a¨ †KvbUvi efficacy ‡ewk|

mZivs Avcwb †`L‡Z PvB‡eb,

`Õ‡Uv drug-Gi applied dose-G †KvbUvi maximum response ‡ewk Ges †mB Abhvqx Avcbvi ultimate conclusion A_vr answer to the research question n‡e drug ‘A’-Gi efficacy drug ‘B’-Gi PvB‡Z †ewk or vice versa.

Research question

wKš research question formulate Kivi mgq
Avcwb wjL‡jb:

Which drug is better: drug-’A’ or drug-’B’?

nq‡Zv †`Lv †Mj,
efficacy-i w`K †_‡K drug-’A’ better n‡j I,
price, duration of treatment required,
side effects BZ¨vw`i w`K †_‡K drug-’B’ better.
Zv n‡j conclusion e`‡j †h‡Z cv‡i|
ZvB research question-Gi fvlv Le mveavbZvi mv‡L
LeB specific-fv‡e wbaviY Ki‡Z n‡e|

Research questions Kx K‡i ^Zwi nq

- New questions raised from previous studies
- Contradictory findings / suggestions
- Imperfect designs
- Other deficits:

e.g., - small sample size,

- some outcome variables not addressed,

- dealt with special population groups

Research question

†hgb,

GKUv M‡elYvq nq‡Zv `ỏ‡Uv population-Gi height-weight ‡`Lv n‡q‡Q|
A_P nutritional status ev food habit-Gi g†Zv outcome variable address Kiv nqwb|

Av‡iKUv M‡elYvq nq†Zv †Lqvj Kiv nqwb †h GKUv group-G GKUv we‡kl m¤ú`v‡qi (special population group-Gi) gvb‡li AwaK¨ Av‡Q| Zv‡`i nq †Zv food habit Avjv`v (‡hgb, vegetarian), hv M‡elYvi dj‡K cfweZ Ki‡Z cv‡i|

Research question: wbR¯ †bvU

Research-Gi cieZx avc Kx Kx?

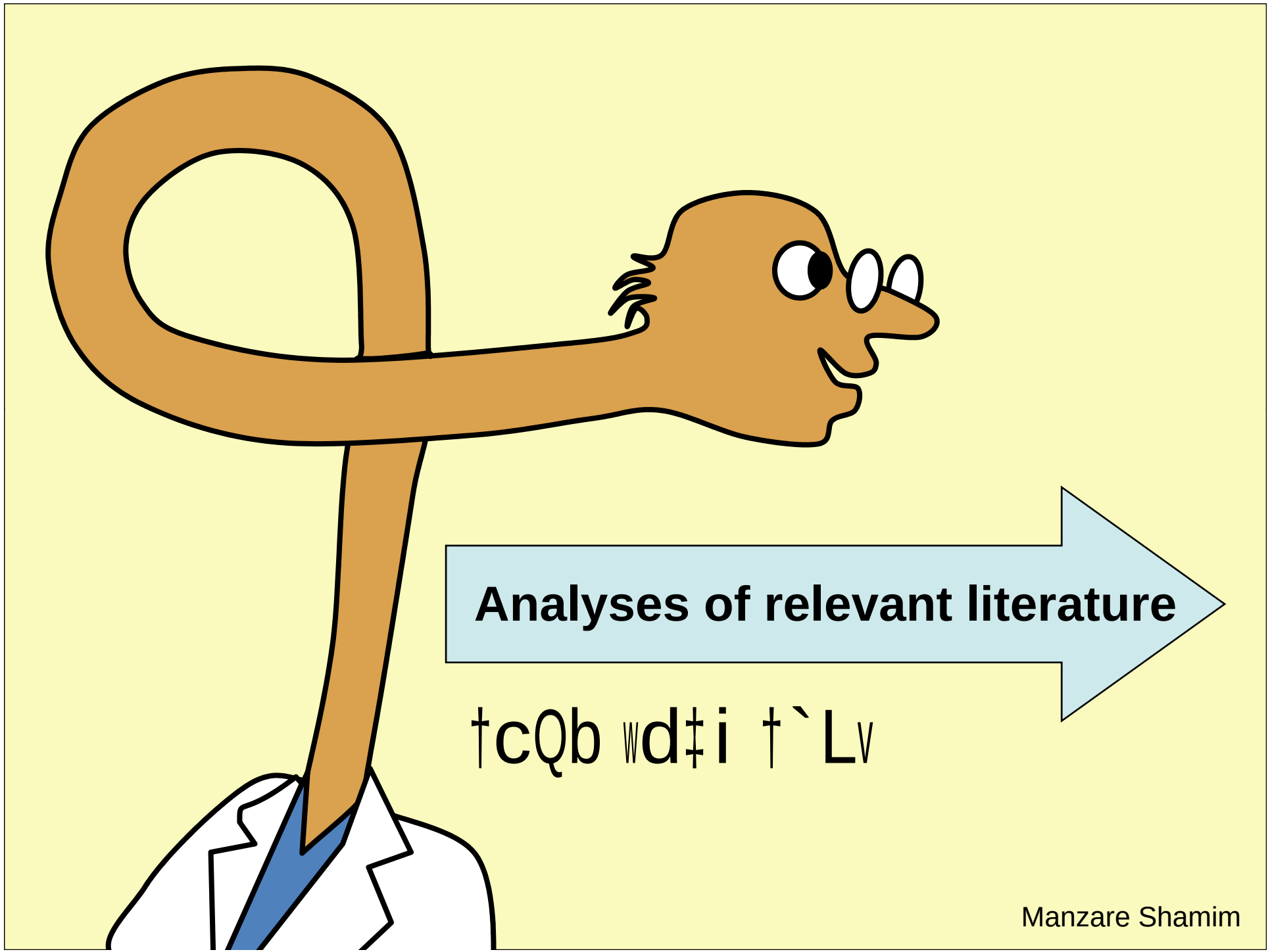
- **Selecting** appropriate research design, sample size and sampling technique
- **Developing** data collection plan and data collection instrument
- **Implementing research (collecting data)**
  - Organising activities
  - Collecting data
- **Managing and analysing data**
  - Cleaning, processing and analysing data
  - Interpreting the findings

Av‡Mi slide-G
‘cleaning’ kãUv ‡Lqvj Kiv `iKvi|

A‡bK mgq M‡elYv Ki‡Z wM‡q wKQ wKQ fj n‡q hvq-

nq ‡Zv GKUv eqm †jLv nqwb,
ev `Ô‡Uv c‡ki DËi †bvU Kiv nqwb|

Avevi Ggb I n‡Z cv‡i †h
K‡qKUv data LeB A™Z- Ab¨vb¨ data-ı Zjbvq
G‡Kev‡iB Avjv`v (outliers)
-G ai‡bi data, study ‡_‡K ev` w`‡Z n‡e|


Analyses of relevant literature
†cQb wd‡i †`Lv
Manzare Shamim

Analyses of relevant literature

Scholarly articles, eB Ges Ab¨vb¨ sources †N‡U
bx‡Pi KvR¸‡jv Ki‡Z n‡e:

Research-Gi context e‡S research topic-wUi
^Zwi n‡q IVvUv e‡S †djv;

Zvici †mB topic-wU†K surround K‡i
†h-me scholarly conversation Pj‡Q †m¸‡jv cixÿv Kiv;

wewfb study-i findings-Gi g‡a¨ m¤úK© L‡R †ei Kiv
Ges Av‡Mi research-¸‡jvi gaps identify Kiv|

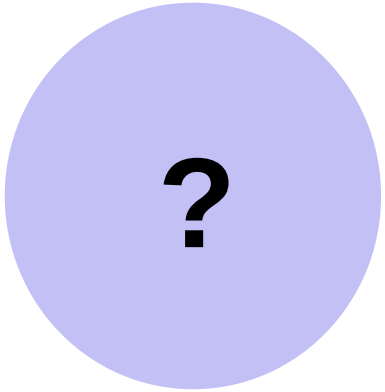
Analyses of relevant literature

Methods m¤ú‡K detailed avi Yv wb‡Z I
GB analysis mvnvh¨ K‡i|
Literature-¸‡jv‡K categorise K‡i
topic msµvšÍ focussed reading Ges note-taking
organise Ki‡Z n‡e|

ceeZx studies-Gi findings-Gi
trends and patterns eS‡Z n‡e|
Gme source ‡_‡K relevant portion-¸‡jv‡K
Introduction Ges Discussion-G e¨envi‡i Rb¨
†e‡Q ivLv I `iKvi|

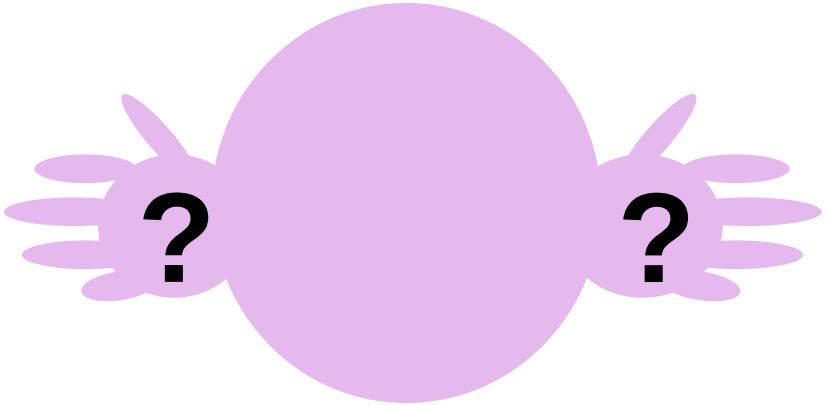
Analyses of relevant literature : wbR¯ †bvU

Types of research design



Basic (pure) research

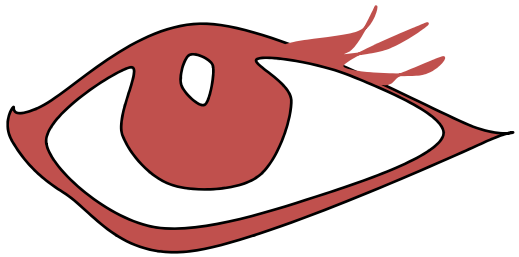
Is aimed to improve scientific theories for improved understanding or prediction of natural or other phenomena.



Applied research

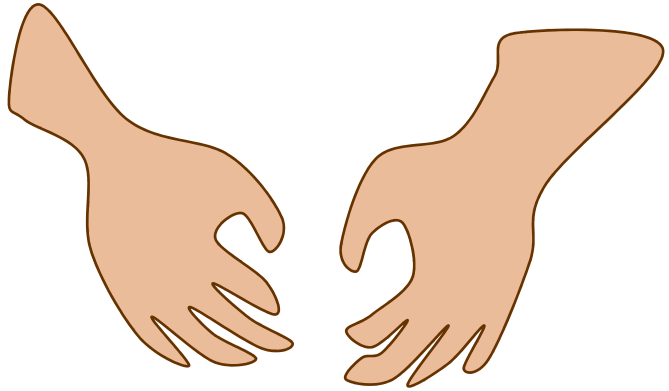
Uses scientific theories to develop technology or techniques to intervene and *alter* natural or other phenomena.

Research design



Observational study

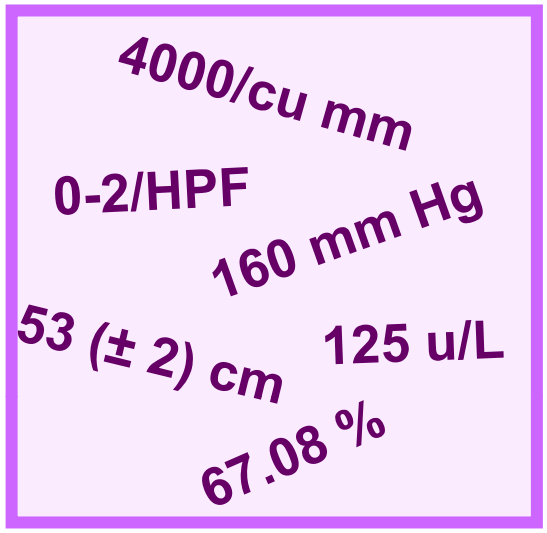
(ïa observe Ki‡j-
†Kv‡bv intervention bv _vK‡j)



Experimental (interventional) study

(B”QvKZfv‡e †h †Kv‡bv ai‡bi
intervention Kiv n‡j)

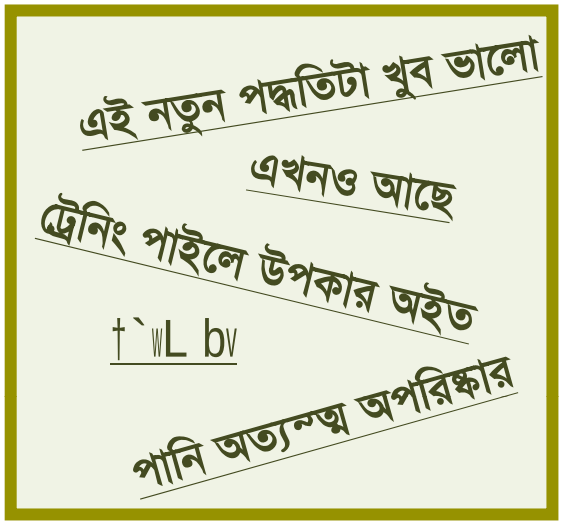
Research design



Quantitative study

Data collected nq numbers-G

e.g., This solution is X% better”

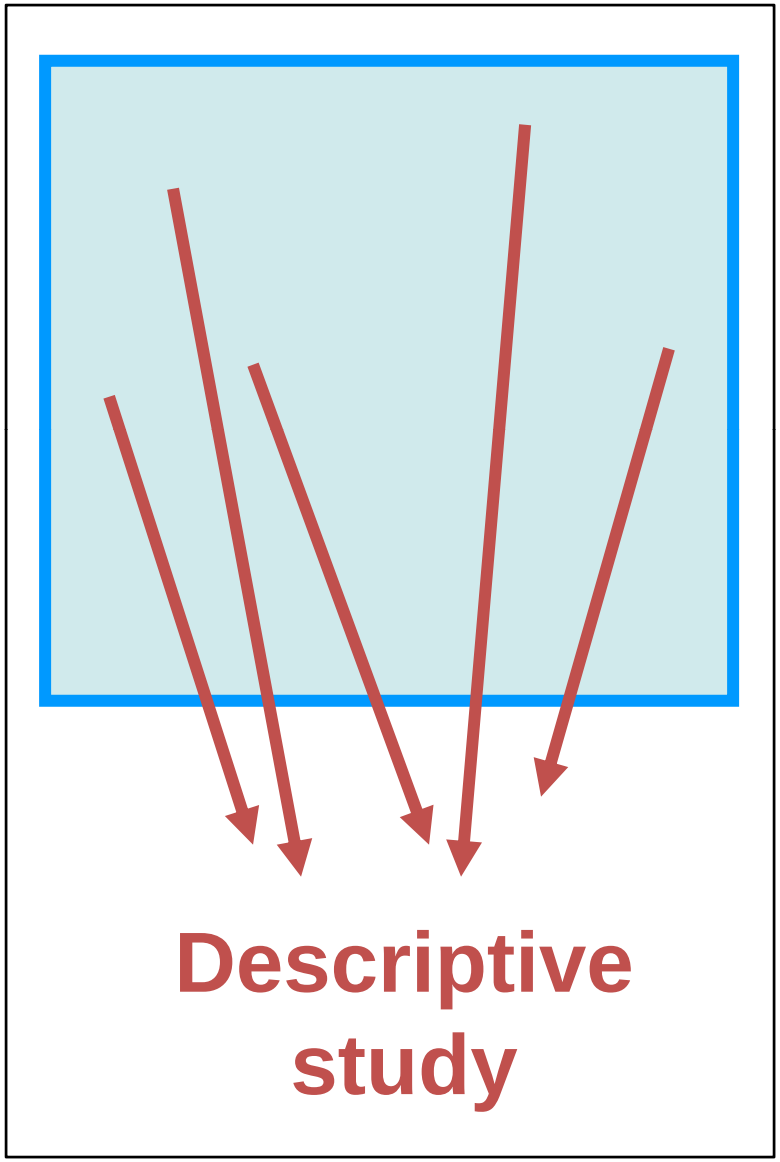


Qualitative study

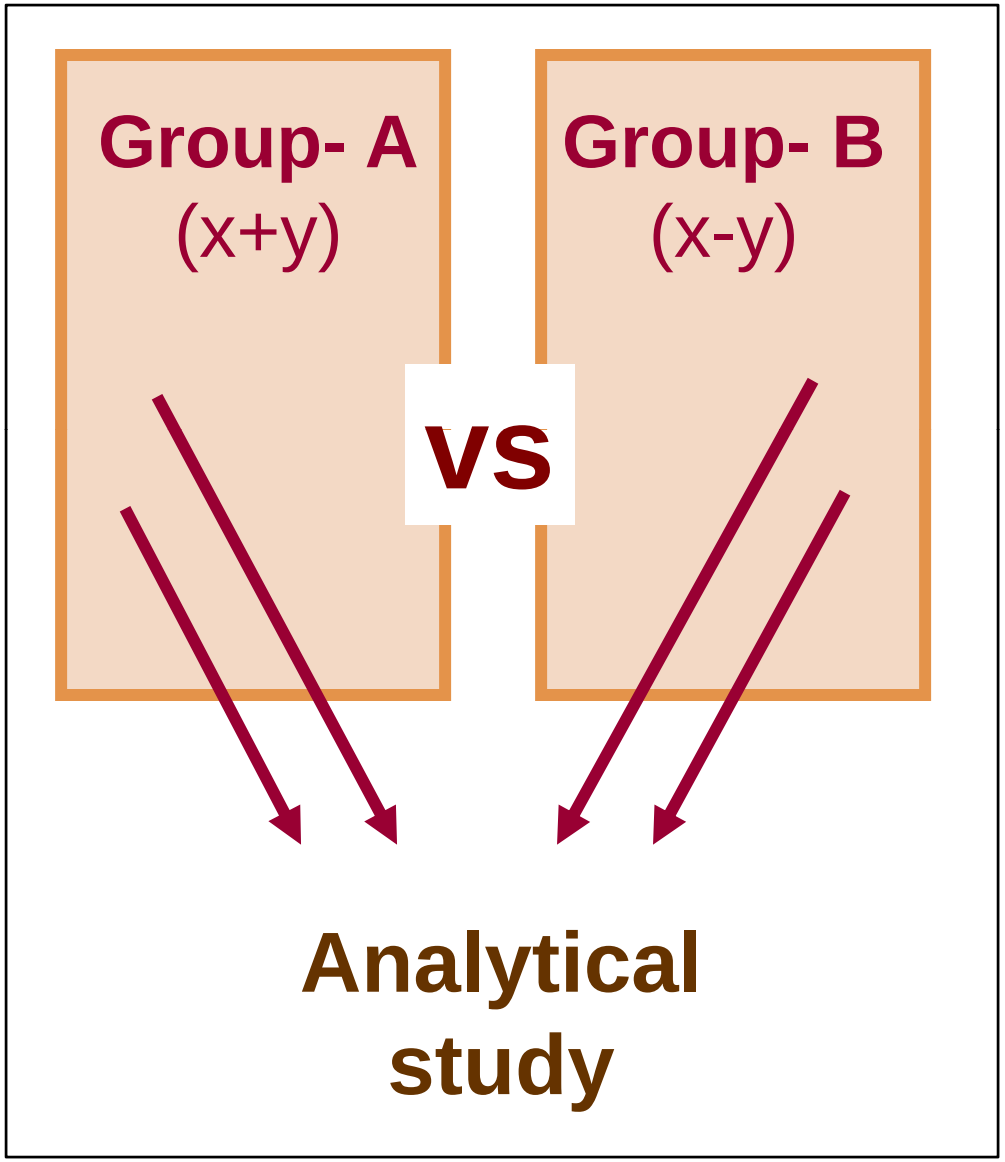
Data collected nq words-G

e.g., This is a new way of solving our problem

Research design



Descriptive study



Analytical study

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Research design

Analysis me M‡elYvqB vK‡e,
wKš me M‡elYv analytical bq|
Descriptic study-‡Z wbQK
Kx Kx, Kxfv‡e, KLb, †Kv_vq Av‡Q,
Zvi description v‡K|

Avi analytical study-‡Z v‡K
Mæ‡c Mæ‡c Zjbv K‡i cv_K¨ analyse Kivi †Póv |

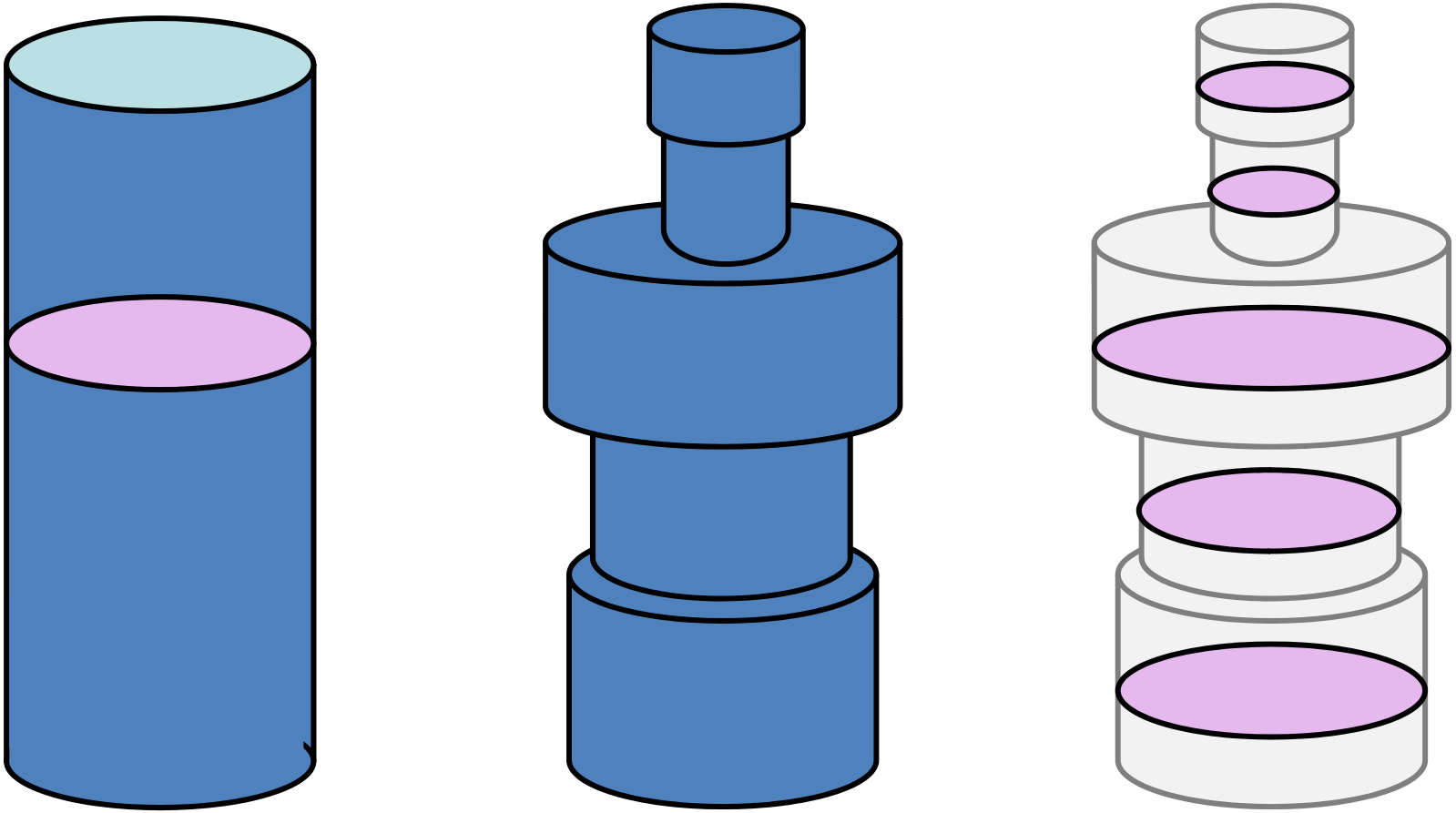
‘x’ Ges ‘y’-Gi gv‡S association LR‡Z
‘x+y’ Mæ‡ci mv‡_ ‘x-y’ Mæ‡ci Zjbv Kiv nq
(Av‡Mi slide-Gi g‡Zv)|

Cross-sectional study

GUv n‡jv
†Kv‡bv GKUv mg‡q G‡KKRb‡K GKevi K‡i study Kiv|
Z‡e †ek LwbKUv mgq R‡o G‡KKRb‡K GKevi K‡i
study Ki‡j I †mUv‡K cross-sectional study eje|

c‡ii slide-G 'A' QweUv‡Z †`Lb,
cylinder-Uv m¤ú‡K avivYv †c‡Z Avgvi
GKUv cross-section n‡jB P‡j|
wKš B_1-Gi †evZ‡ji aibUv eS‡Z Avgvi
A‡bK¸‡jv cross-section (B_2)wb‡Z n‡"Q|

Cross-sectional study (contd.)



A B_1 B_2

Longitudinal study

GKUv slide c‡ii Qwe¸‡jv †`Lb,

GKRb gvbl‡KB c ‡q GKevi study Kiv n‡q‡Q;
Zvici GKUv mgq cvi K‡i
Av‡iv GKevi ev GKwaKevi study Kiv n‡”Q|
Value-Uv nq GKB _vK‡Q (A),
bq‡Zv evo‡Q (B_1) wKsev Kg‡Q (B_2).

G¸‡jv ZvB longitudinal study.

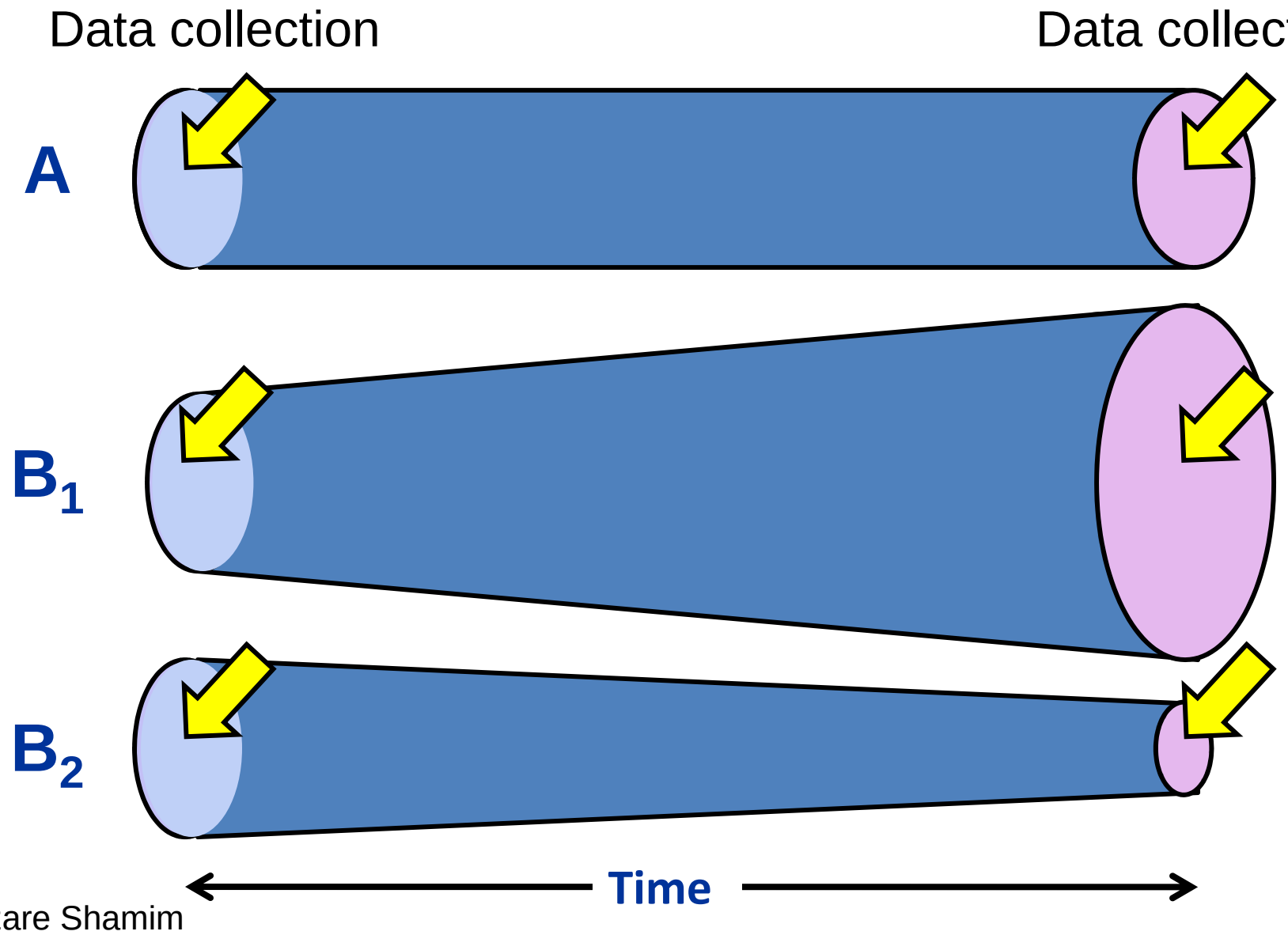
Longitudinal study (contd.)

g‡b ivL‡Z n‡e:
mKv‡j blood pressure †g‡c Ila LvB‡q
we‡K‡j GKB gvb‡li pressure Avevi †g‡c
Il‡ai effect cixÿv Ki‡j
†mUv n‡e longitudinal study,

wKš hw` 25 eQi a‡i ‡Kv‡bv wPwKrmvi dj
study Kiv nq Avjv`v Avjv`v ‡ivMxi Ic‡i GKevi K‡i,
Z‡e †mUv cross-sectional study.

Longitudinal study (contd.)

Research design



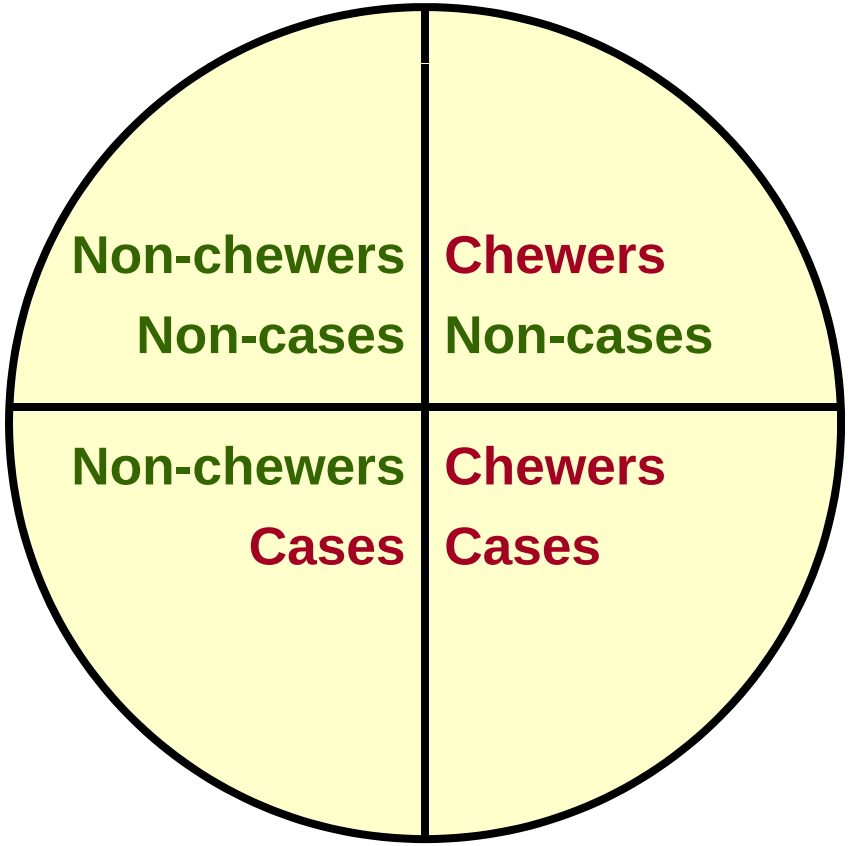
c‡ii 4wU slide-G

cross-sectional study Ges
bvbv ai‡bi longitudinal study-i
characteristics Ges direction
(exposure Ges outcome-Gi ga¨Kvi
m¤ú‡Ki wfwË‡Z)

†`Lvb n‡q‡Q |

Cross-sectional study

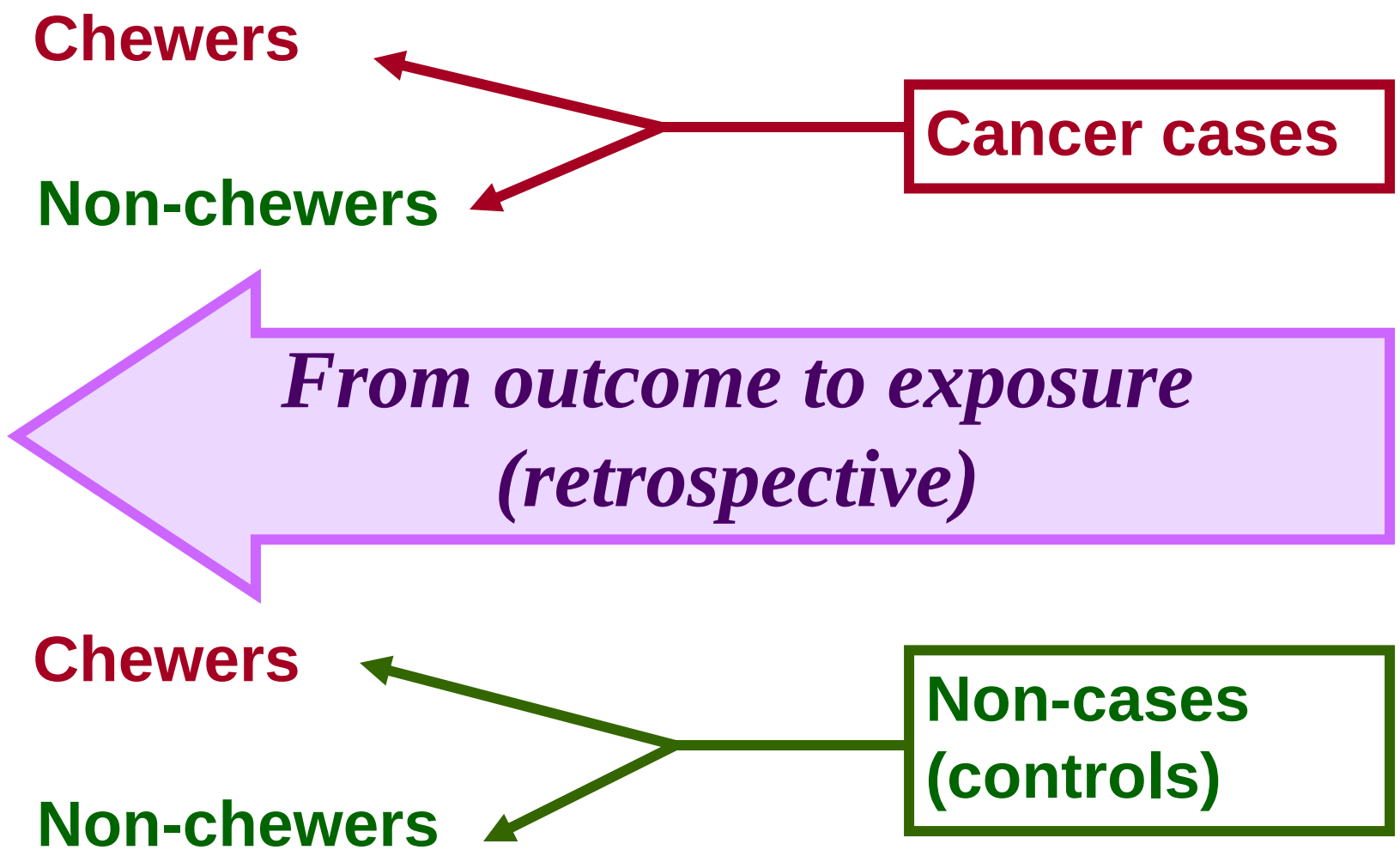
Chewers of tobacco	Cases of oral cancer
Non-chewers of tobacco	Non-cases of oral cancer



Research design: wbR¯ tbvU

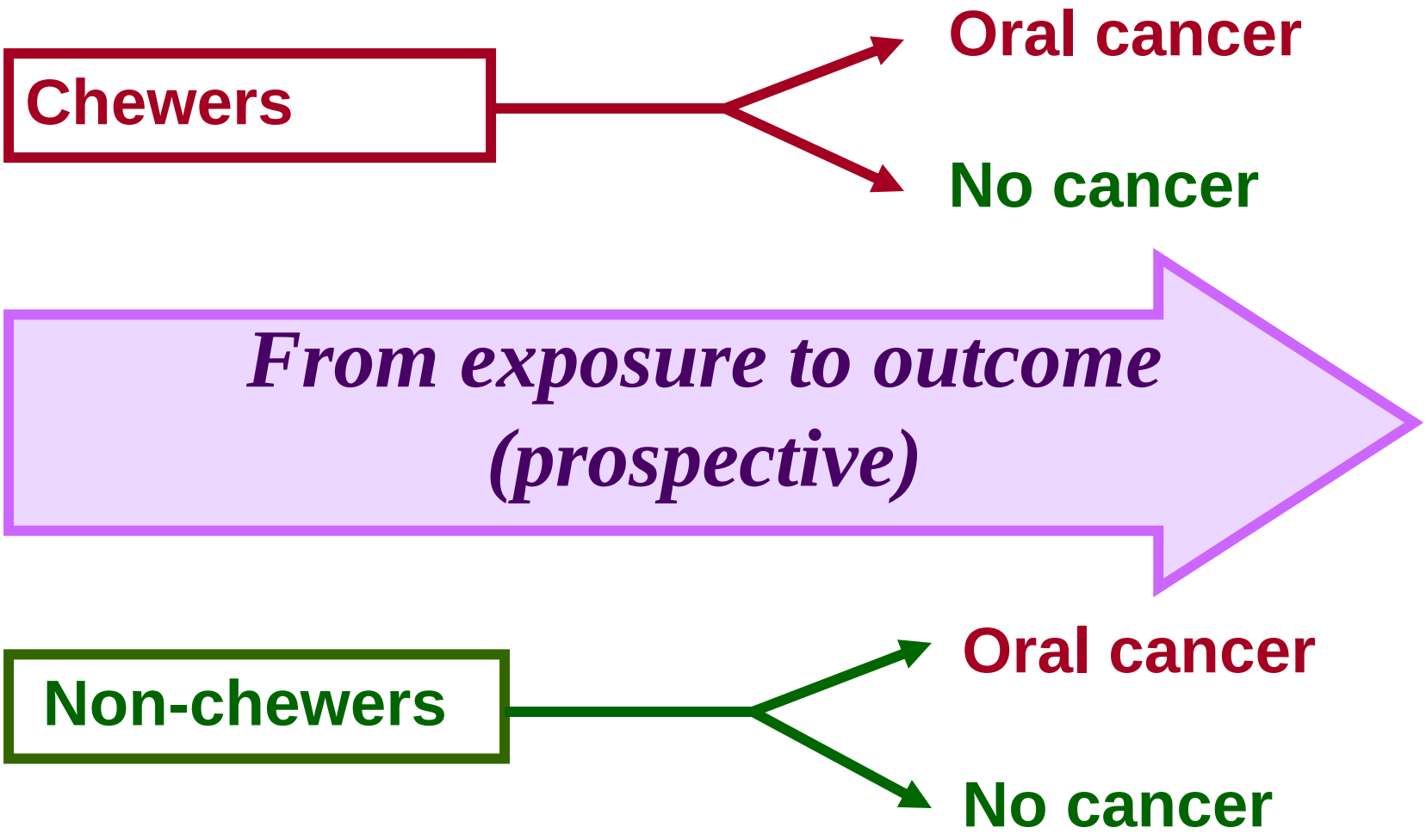
Case-control study

Research design



Research design: wbR¯ tbvU

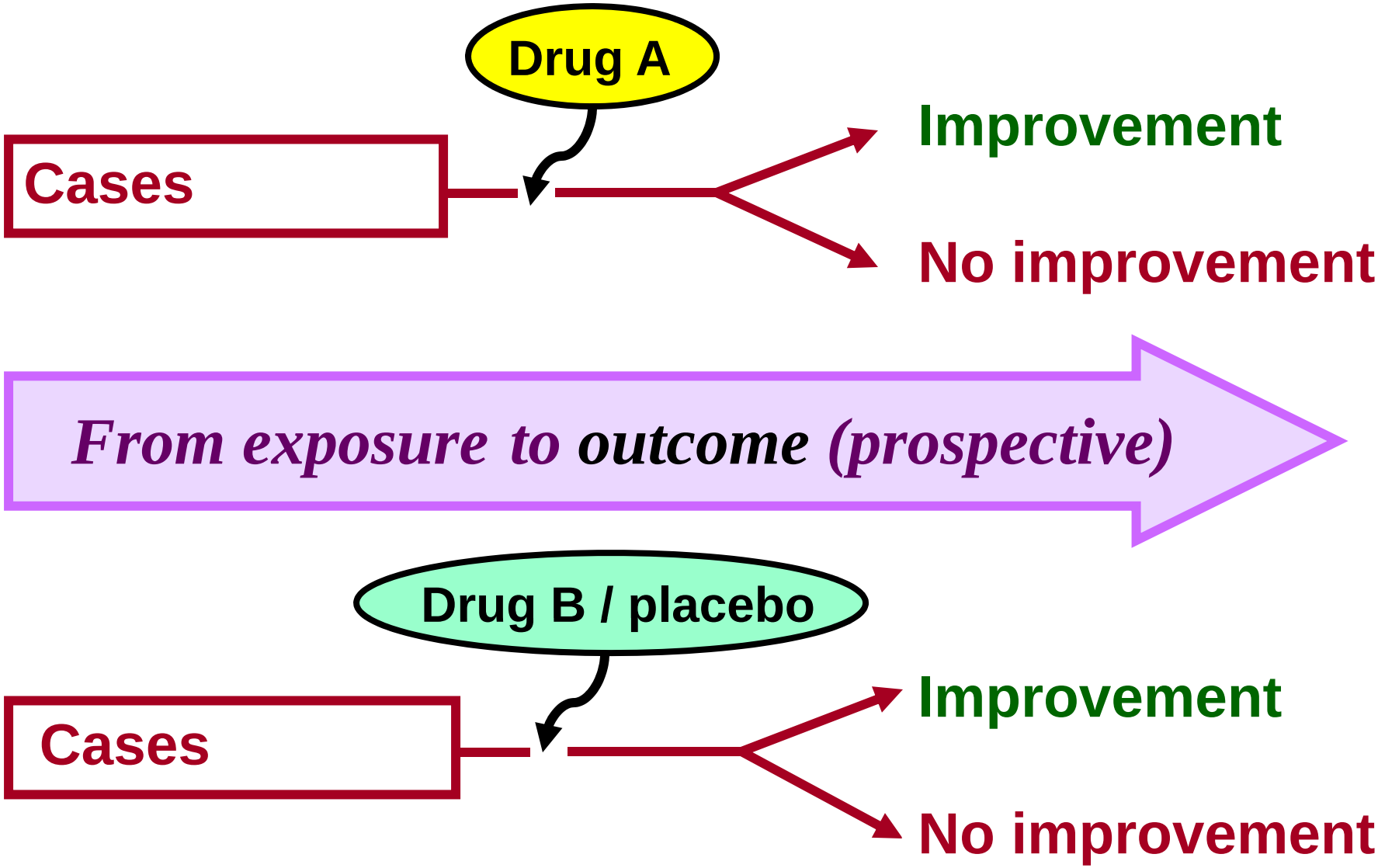
Prospective cohort study



Research design: wbR¯ tbvU

Clinical trial

Research design



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Research design

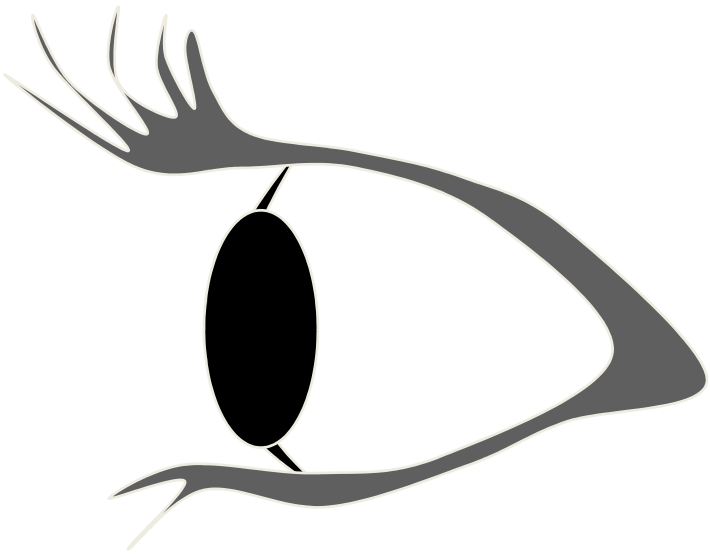
- Basic (pure)
- Applied

- Quantitative
- Qualitative

- Observational
- Experimental

- Descriptive
- Analytical

- (Prospective) cohort
- Case-control
- Cross-sectional



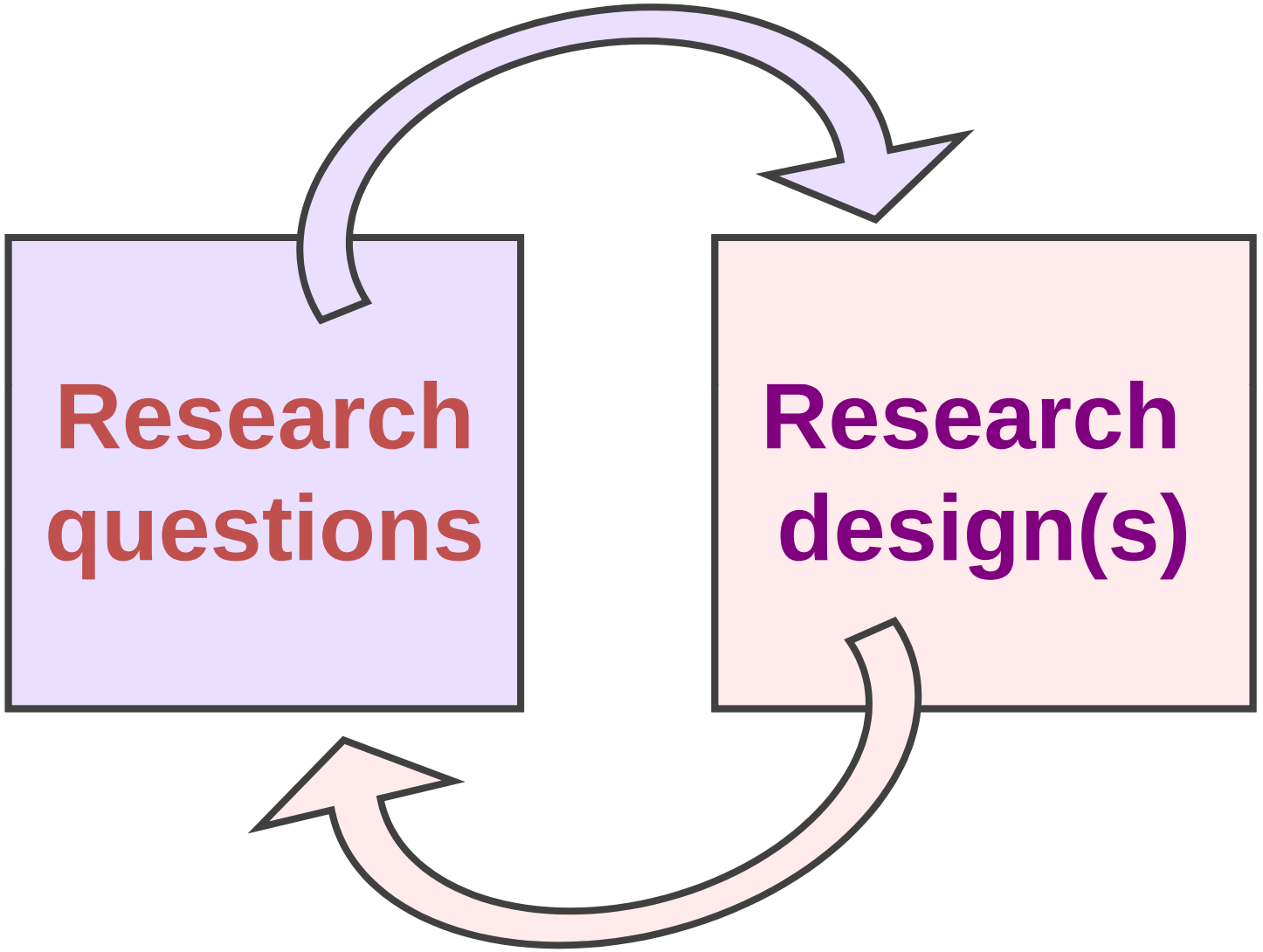
†`Lvi †PvL
Avjv`v

Research design

ZvB †`LwQ, Av‡Mi slide-G:
†h wewfb ai‡bi research design-Gi K_v ejv n‡q‡Q,
†m¸‡jv me mutually exclusive bq|
G‡KKUv box-Gi design-¸‡jv mutually exclusive.

- Qualitative data-‡K quantitate-I Kiv hvq|
- me experimental study-B Avm‡j analytical.
- GKUv observational study
  descriptive-I n‡Z cv‡i, analytical-I n‡Z cv‡i|
- GKUv case-control study
  quantitative-I n‡Z cv‡i, qualitative-I n‡Z cv‡i|

Research question & design



Research question & design

Av‡Mi slide-G
research design-Gi mv‡_
research question(s)-Gi
Nwbô m¤ú‡Ki K_v ejv n‡q‡Q|

c‡i wKQ slide-G
wewfb ai‡bi research design-Gi Dc‡hvMx
research questions-Gi
D`vniY †`qv n‡q‡Q|

Research question-Gi aib

Ges †mB msµvš Í research designs

- What
- Who
- Where
- When
- Which

Descriptive studies

- How
- Why

Analytical studies

Research question(s) ˆZwi Kiv

Ges ‡mB wn‡m‡e research design(s) wbaviY Kiv

What are the common organisms causing meningitis in Bangladeshi children?

Are the baseline characteristics in bladder TCC different from those in SCC following cystectomy?

Same design?

Research question & design

Av‡Mi slide-G

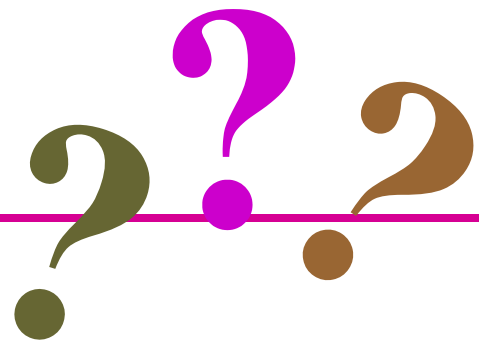
`ß‡Uv research questions wK?

`B ai‡bi research design `we K‡i|

fveb †Zv, †KvbUv †Kgb|

c_gUv descriptive, Avi c‡iiUv analytical.

Research questions for descriptive studies



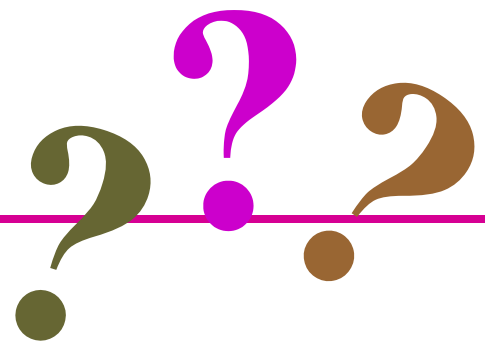
What are the prevalence of different types of atrial septal defects among the rural under-five children of Bangladesh?

Who are the people mostly affected by meromelia?

Where দিয়ে একটা বানানো যায়?

Where is thyroid goiter more common in Bangladesh?

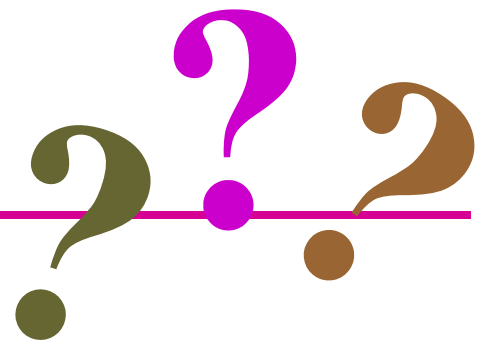
Research questions for cross-sectional studies



What are the incidences of different types of complications of nephrotic syndrome among the patients admitted to a tertiary care hospital?

How are the incidence and severity of appendicitis related with food habit?

Research questions for prospective cohort studies

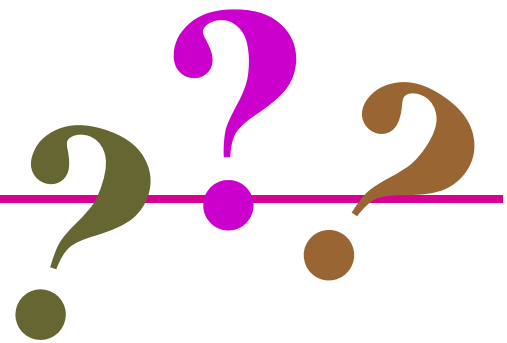


What is the effect of physical exercise on hyperlipidaemia?

What is the impact of CPR training to the medical assistants on the mortality rate of emergency cases?

গ্রুপগুলো কী কী

Research questions for case-control studies:

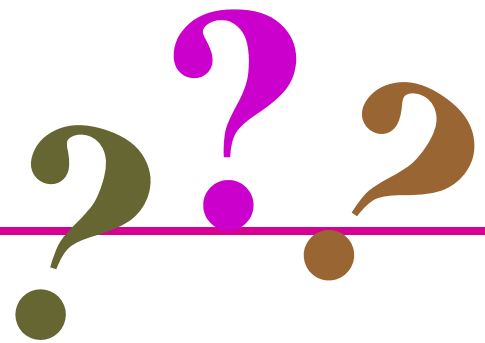


Is there <u>any association</u> between smoking and lung cancer?

Is there <u>any relationship</u> between overt DM and previous gestational DM ?

গ্রুপগুলো কী কী

Research questions for experimental studies:



Is there any influence of 'spirulina'
on experimentally induced atherosclerosis in rats?

How do the sensitivity and specificity of drug 'A'
differ from those of drug 'B' against meningococcus?

গ্রুপগুলো কী কী

Research question & design: wbR¯ †bvU

Research question & design: wbR¯ †bvU

Research question
Ges **hypothesis-** KLb ‡Kv_vq?

me research-GiB research question (GK ev GKwaK) _vK‡e|

wKš hypothesis wK _vK‡ZB n‡e?

Research question & next

In descriptive study

Research question

-এর ভিত্তিতে

study design & methodology

In analytical study

Research question

-এর ভিত্তিতে

hypothesis

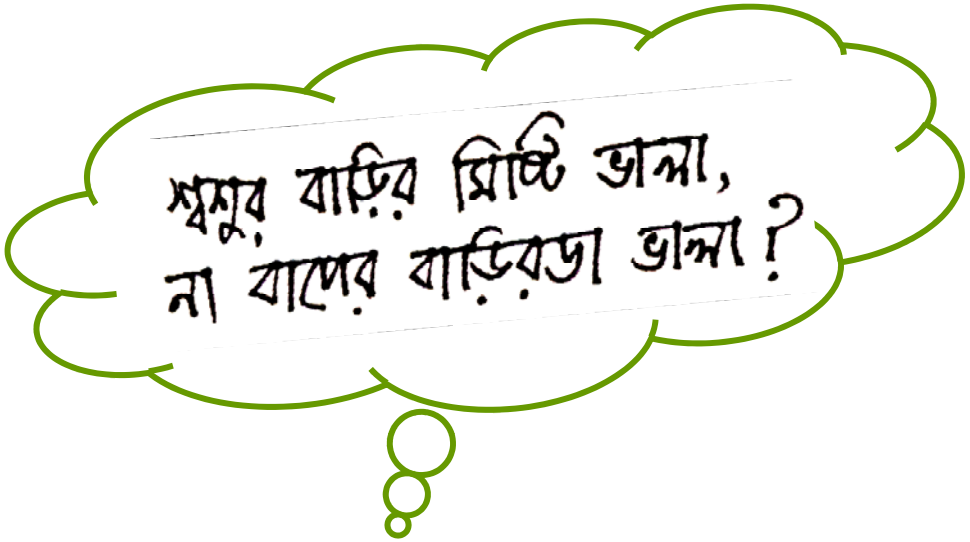
-এর ভিত্তিতে

study design & methodology

hypothesis jvM‡Q
analytical study-‡Z,

wKš descriptive study-†Z bq|

Research question & next



Research question

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Research question & next

Av‡Mi slide-G gwnjvi mvg‡b KwVb ck|

wKš wZwb research-minded.

ZvB wZwb †Kv‡bv subjective emotional decision bv wb‡q Gfv‡e fve‡Qb:

Research question & next

Zvi cil, qb wK Avi gv‡b?
g‡bi K_v †ewi‡q Gj|

Research hypothesis

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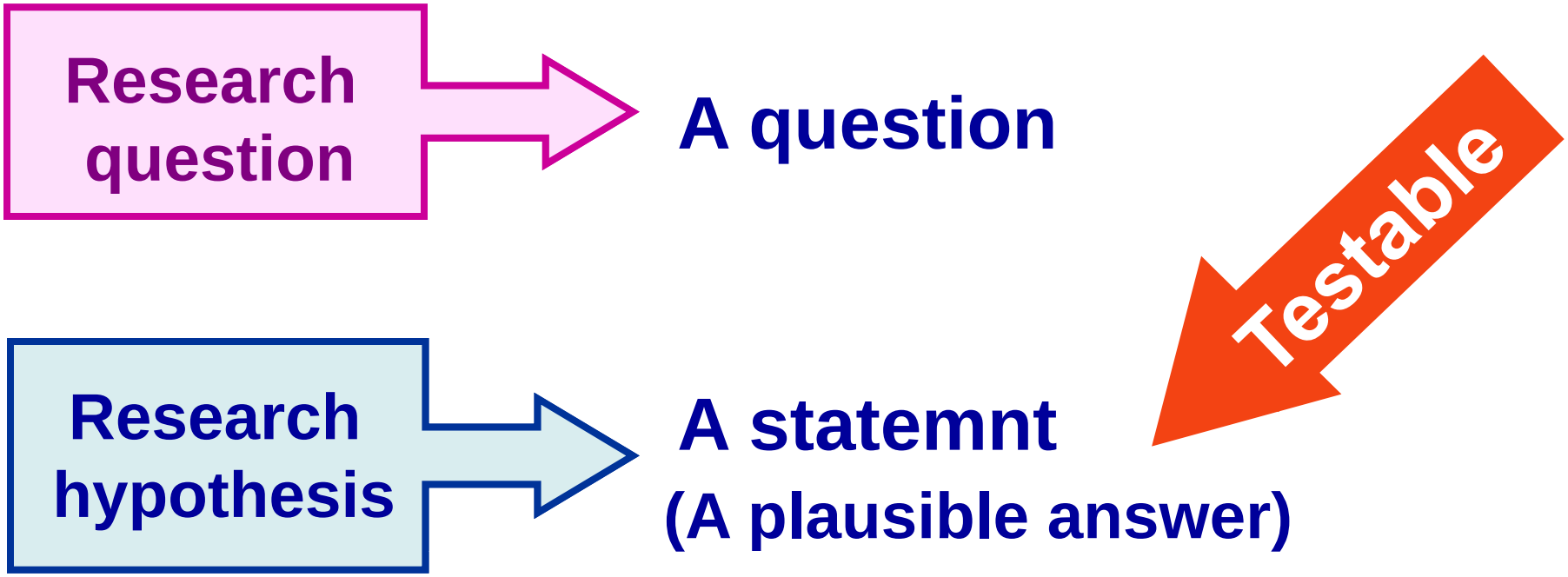
Research question & next

Z‡e cKZ researcher-Gi hypothesis wKš ‰Zwi n‡e ïagvÎ AZx‡Zi scientific evidence Avi eZgv‡bi scientific uderstanding-Gi wfwË‡Z|



Research question & next

‘Plausible’ kãUv GLv‡b ¸iæZcY|
AZx‡Z M‡elKiv hv e‡S‡Qb ev suggest K‡i‡Qb
(Zv literatere search-Gi gva¨‡g †R‡b)
Ges Avcbvi scientific †eva hv e‡j, Zvi Ici wfwË K‡i
research hypothesis/hypotheses
formulate Ki‡Z n‡e- Av›`v‡Ri wfwË‡Z bq|

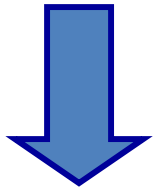
ZvB research hypothesis n‡e:
logical,
intelligent,
tentative
Ges testable.

From Research question to hypothesis

Research question

Does chewing sugarless gum have any beneficial effect on the impact of ‘fast-food’ on teeth?

(Question mark wb‡q †kl nq)



Research hypothesis

Chewing sugarless gum has beneficial effect on the impact of ‘fast-food’ on teeth.

(Full stop wb‡q †kl nq)

দু'ভাবে hypothesis লেখা যায়

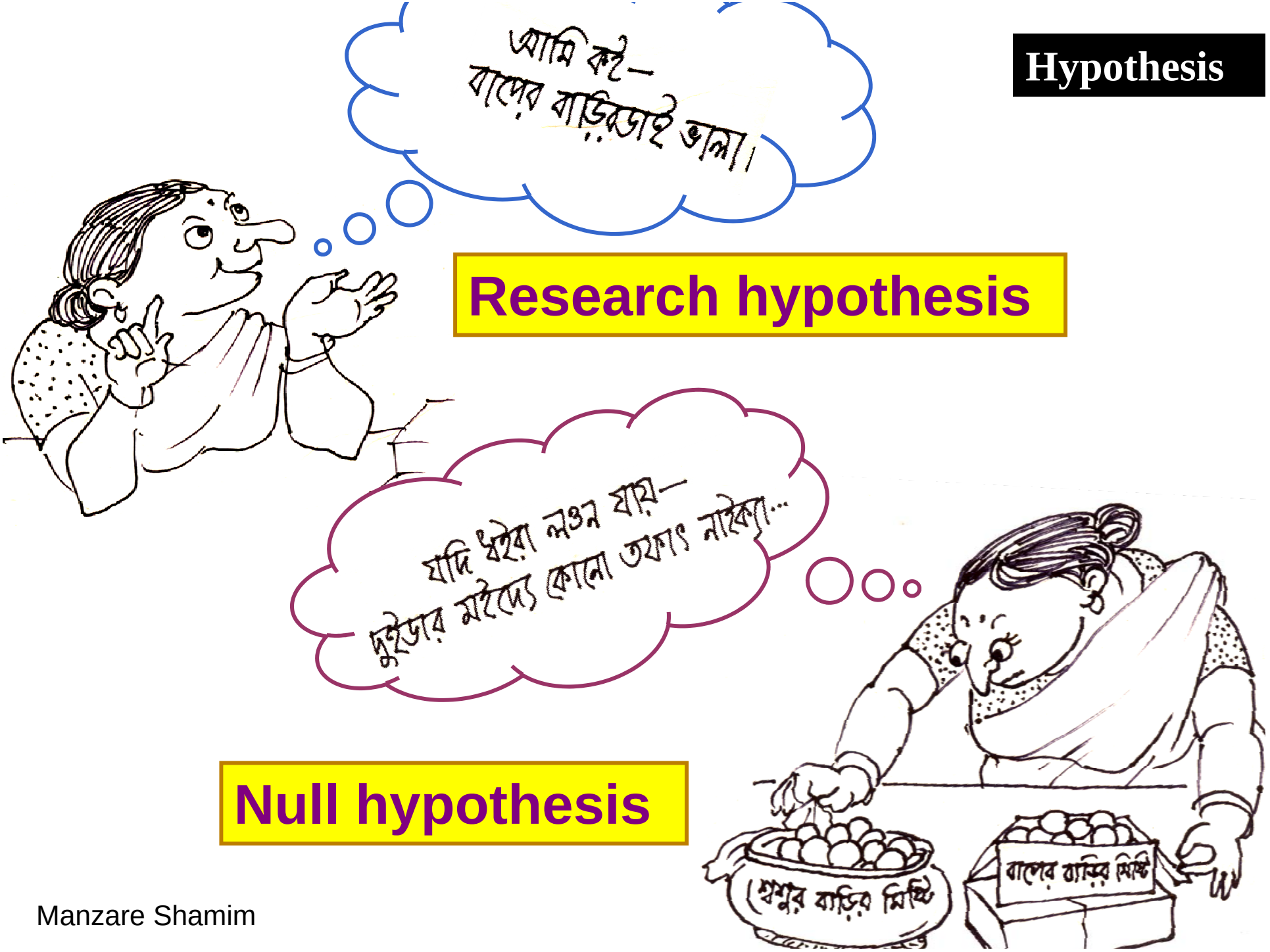
Written as a 'null hypothesis', H_0

There is <u>no difference</u> between the efficacies of drug 'A' and drug 'B' in the treatment of ……..

Written as an 'alternative (research) hypothesis', H_1, H_a

Drug 'A' has <u>more efficacy</u> than drug 'B' in the treatment of ……..

Hypothesis



Research hypothesis

Null hypothesis

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Hypothesis

gwnjv mwZ¨B research-minded.

Dwb GKUv neutral approach wb‡q‡Qb|
g‡b hZ D_vj-cv_vjB _vKK bv †Kb,
researcher wn‡m‡e Dwb fve‡Qb
`B wgwói g‡a¨ †Kv‡bv Zdvr †bB|

‡Kv‡bvUvB †Kv‡bvUvi PvB‡Z fv‡jv bq|

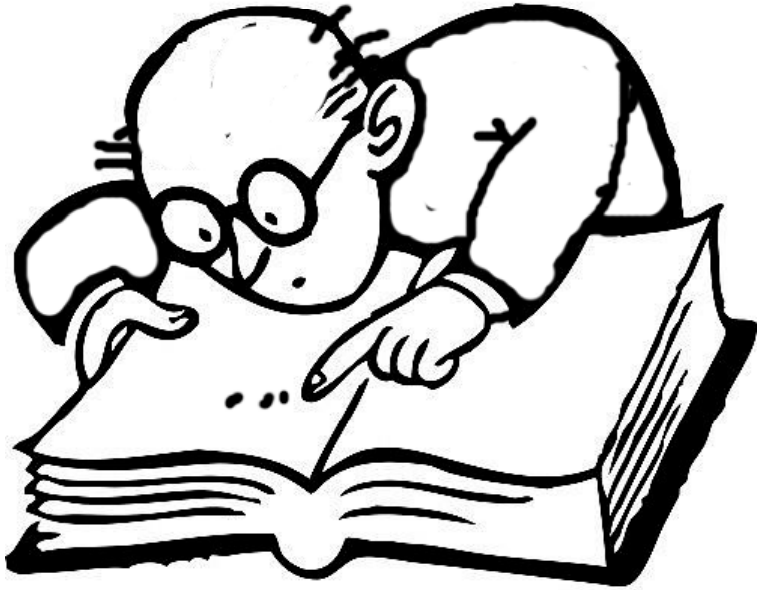
Hypothesis

Research hypothesis (Alternative hypothesis)

_v‡K cvZvq

Null hypothesis

_v‡K gv_vq



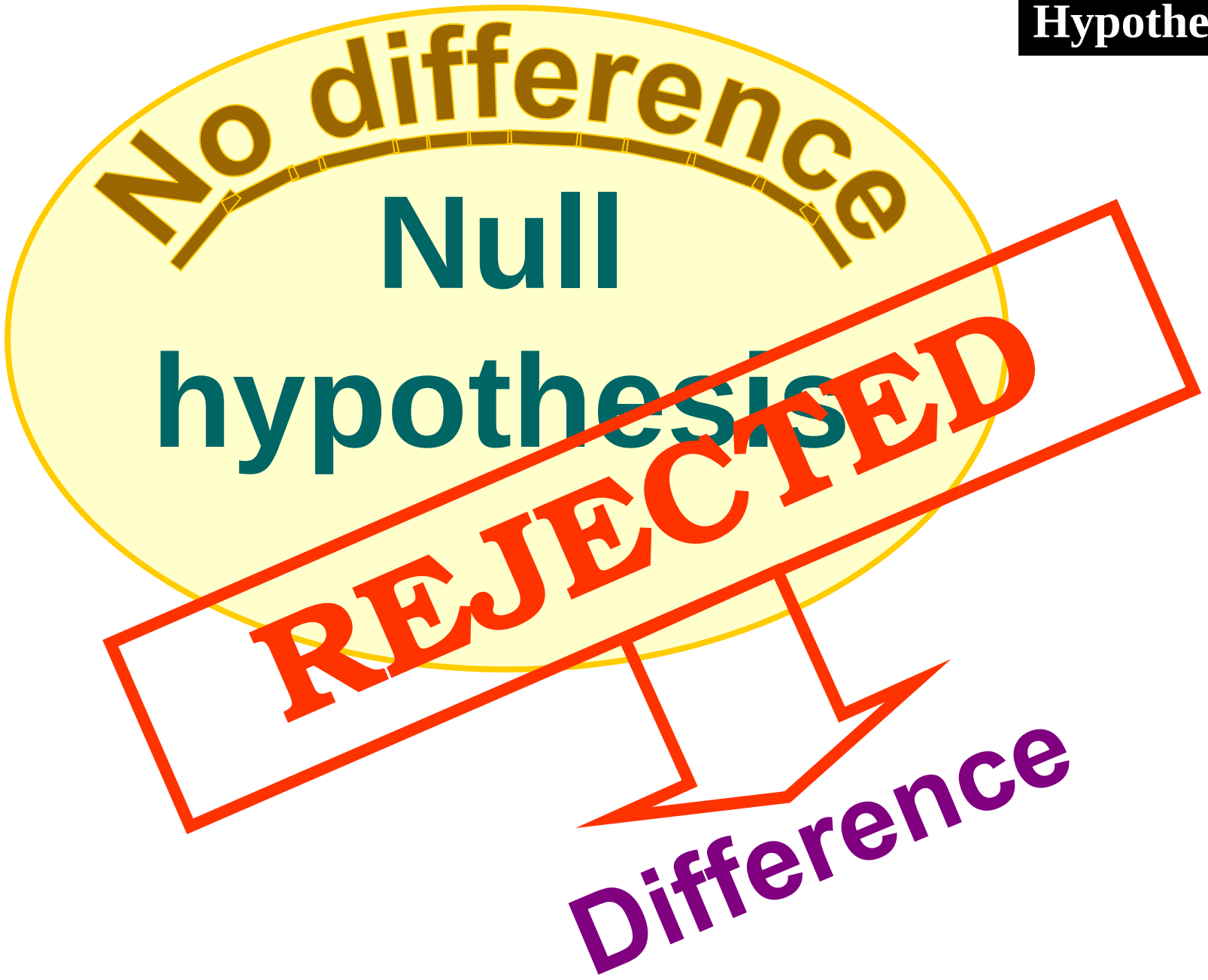
Hypothesis

A_vr
thesis/dissertation-G, journal article-G,
A_ev seminar presentation-G ejv n‡e
research hypothesis (alternative hypothesis).

Avi g‡bi g‡a¨ _vK‡e null hypothesis.

Dch³ hypothesis testing-Gi gva¨‡g hw`
null hypothesis rejected nq (c‡ii slide-G),
Z‡eB ejv hv‡e
`B group-Gi g‡a¨ difference Av‡Q-
(hv‡K e‡j statistically significant difference).

Hypothesis



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g‡b ivL‡Z n‡e:

Hypothesis

“statistically significant difference”
(significantly higher/lower, greater/smaller) Qvov †Kv‡bv difference-‡KB difference wn‡m‡e
(A_vr higher/lower BZ¨vw` wn‡m‡e) †`Lvb hv‡e bv|

Z‡e higher/lower mean/median value BZ¨vw` †_‡K hw` g‡b nq †h †Kv‡bv difference Av‡Q
(†hgb cwZwU higher age group-G higher mean)
Z‡e †mUv trend wn‡m‡e D‡jøL Kiv †h‡Z cv‡i
(“not reaching any significant level”- GUv D‡jøL K‡i)

Hypothesis

GUvI g‡b ivLv `iKvi:

GKRb M‡elK KvR K‡ib

†Kv‡bv hypothesis prove Kivi Rb¨ bq;

wZwb KvR K‡ib hypothesis-wU test Kivi Rb¨|

mZivs..

null hypothesis rejected bv n‡j I Zv †g‡b wb‡Z n‡e, Zvi KviY ‡ei Ki‡Z n‡e,

Ges e¨vL¨v w`‡Z n‡e|

Hypothesis: wbR¯ †bvU

Hypothesis to objectives

GK ev GKvwaK research question

Ges GK ev GKvwaK research hypothesis

wbavi‡Yi ci Av‡m

GK ev GKvwaK research objectives `vo Kiv‡bvi ck|

A‡bK mgq GgbI n‡Z cv‡i †h

GKvwaK specific objective-Gi †Kv‡bvwUi Rb¨

hypothesis testing-Gi `iKvi co‡Q, Ab¨vwUi Rb¨ bq|

†m‡ÿ‡Î objective D‡jøL Kivi ci †KvbwUi Rb¨

hypothesis Av‡Q Ges †mUv Kx Zv ejv hvq|

Research objective

- General objective (aim)
  GKwU broader, less specific term, hvi gv‡b n‡jv
  Ggb GKwU purpose ev result
  ‡hw`‡K research effort-wU directed .

- Specific objective n‡jv
  †mB purpose ev result-Gi j ÿ¨ wb‡q research-wU‡Z
  †h c‡_ G‡Mv‡bv n‡e (A_vr hv Kiv n‡e)|

  Specific objectives c‡ivcwi action-oriented welq|

Research objective

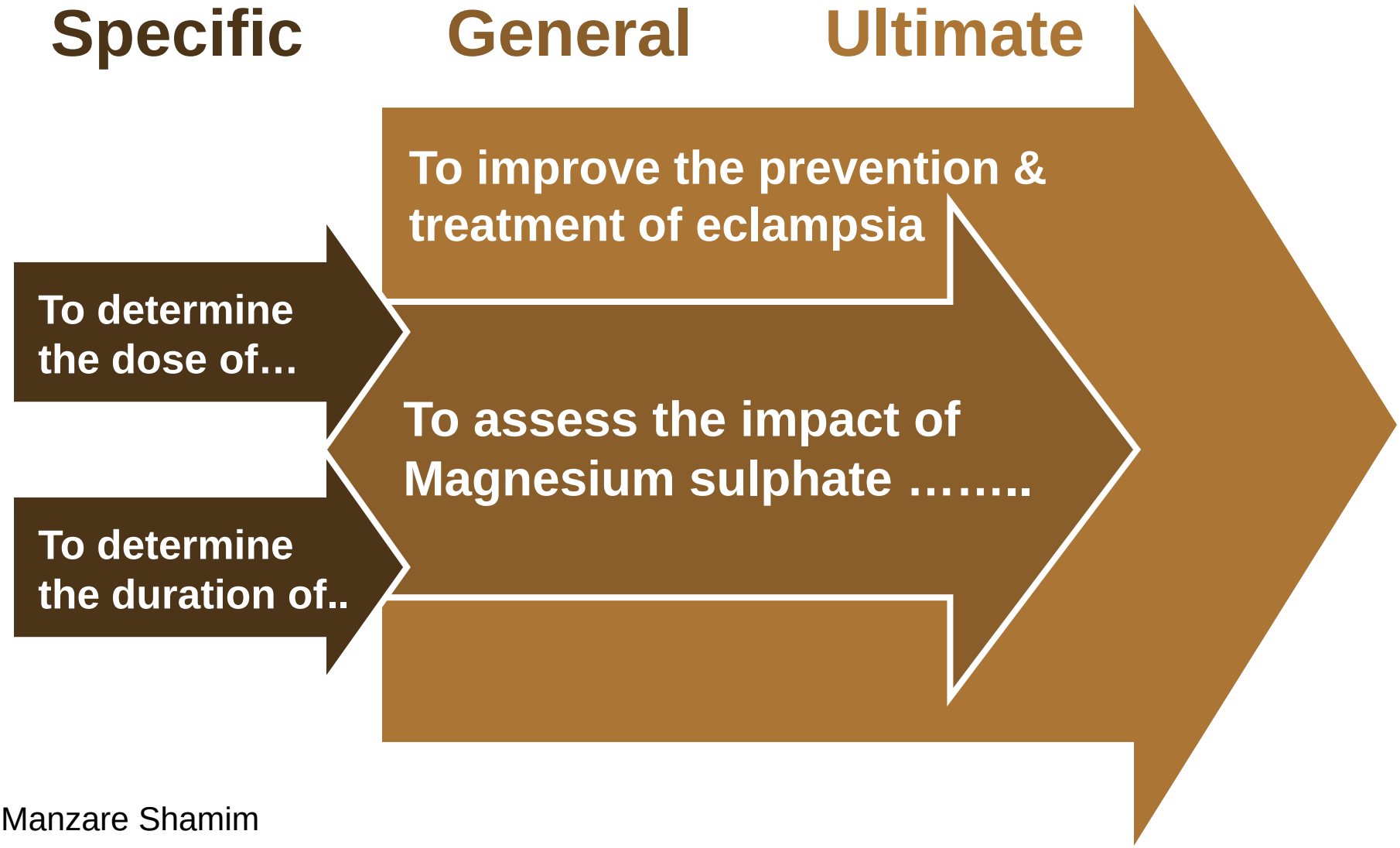
Research objectives wb‡q fve‡Z nq K‡qK av‡c:

c_‡g ultimate objectives (me‡P‡q generalised version).

Zvici general objectives (ev aims).

Avi me‡k‡l specific objectives.

Research objective



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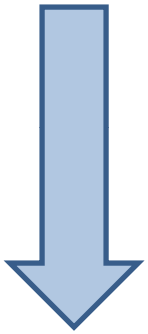
From general to specific objectives

General objective



To <u>determine</u> the risk factors for ischaemic heart disease in the …… population.

Specific objective

To <u>identify</u> the factors associated with high cholesterol level in the population.

To <u>identify</u> the factors associated with endothelial damage in the population.

Research objective

cwZwU

specific objective-‡K n‡Z n‡e:

S- Specific (and unequivocal)

M- Measureble

A- Attainable

R- Relevant

T- Time bound

Examples of specific objectives

Objectives wjL‡Z wM‡q

mwVK action verb wbevPb KivUv Le Riæix|

To <u>determine</u> the frequency of cephalopehic disproportion in the Bengali pregnant women of Bangladesh

To <u>find out</u> the prevalence of different varieties of scrotal tumours in the Chakma Bangladeshis

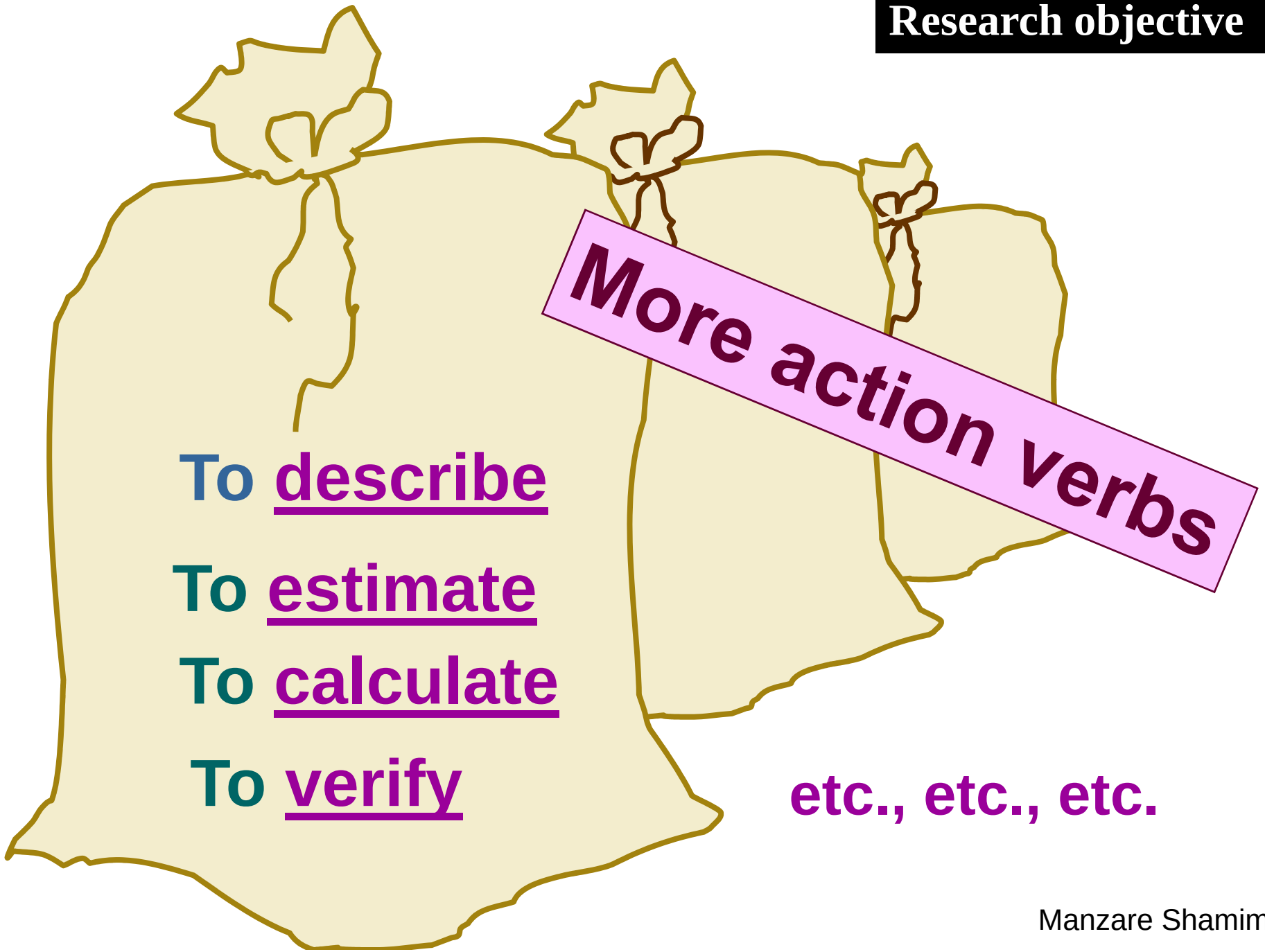
Examples of specific objectives (contd.)

To measure the foetal skeletal dimensions through ultrasonography in different trimesters of pregnancy during antenatal checkup at a tertiary care hospital.

To define the categories of understanding levels of the trainee nurses regarding cardio-pulmonary resuscitation

To compare the indicators of nutritional status of the school-going children between the urban and rural communities.

Research objective



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Research objectives: wbR¯ †bvU

Research jargons

Avgiv †ek wKQ research terms wb‡q
K_v ejjvg|
Gev‡i Av‡iv wKQ kã ev jargons of research.

Jargon ej‡Z ewS,
†Kv‡bv we‡kl field-G †Kv‡bv we‡kl A_ enb K‡i,
Ggb †Kv‡bv kã|
G‡ÿ‡Î mvaviY e¨env‡ii kã¸‡jv‡KB †Kv‡bv
technical meaning `vb Kiv nq|
Research field-Gi Av‡iv wKQ jargons GiKg:

Av‡iv wKQ ‘research jargons’

Population

wKQ subjects ev objects
(animate or inanimate)-Gi mgšq,
nv‡`i GKB iKg trait(s) A_vr characteristic(s) Av‡Q|

bvbvfv‡e population define Kiv hvq|
wKš gj point wVK _vK‡e- “same trait”.
Ab¨ A‡bK trait-G Awgj _vK‡j I GKwU trait-Gi wfwË‡Z
GKUv research population defined n‡Z cv‡i|

Population

G¸‡jv wK population?

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G¸‡jv wK population?

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Population

Av‡Mi `'‡Uv slide-Gi DËi n‡jv: wbðqB|

Gev‡i ‡`wL, GLv‡b KÕUv population- `B, bv wZb?

GKfv‡e ej‡j `B, Av‡iKfv‡e ej‡j wZb- ZvB bv?

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GLv‡b

Population

†Kvb †¶‡Î †KvbUv population, Zv ejv hv‡e †Zv?

Lipid profiles of: - Bangladeshis

- Bangladeshi males

- Bangladeshi males living in Dhaka

- Bangladeshi males living in Dhaka who work as security guards in apartments

as compared to those who pull rickshaw

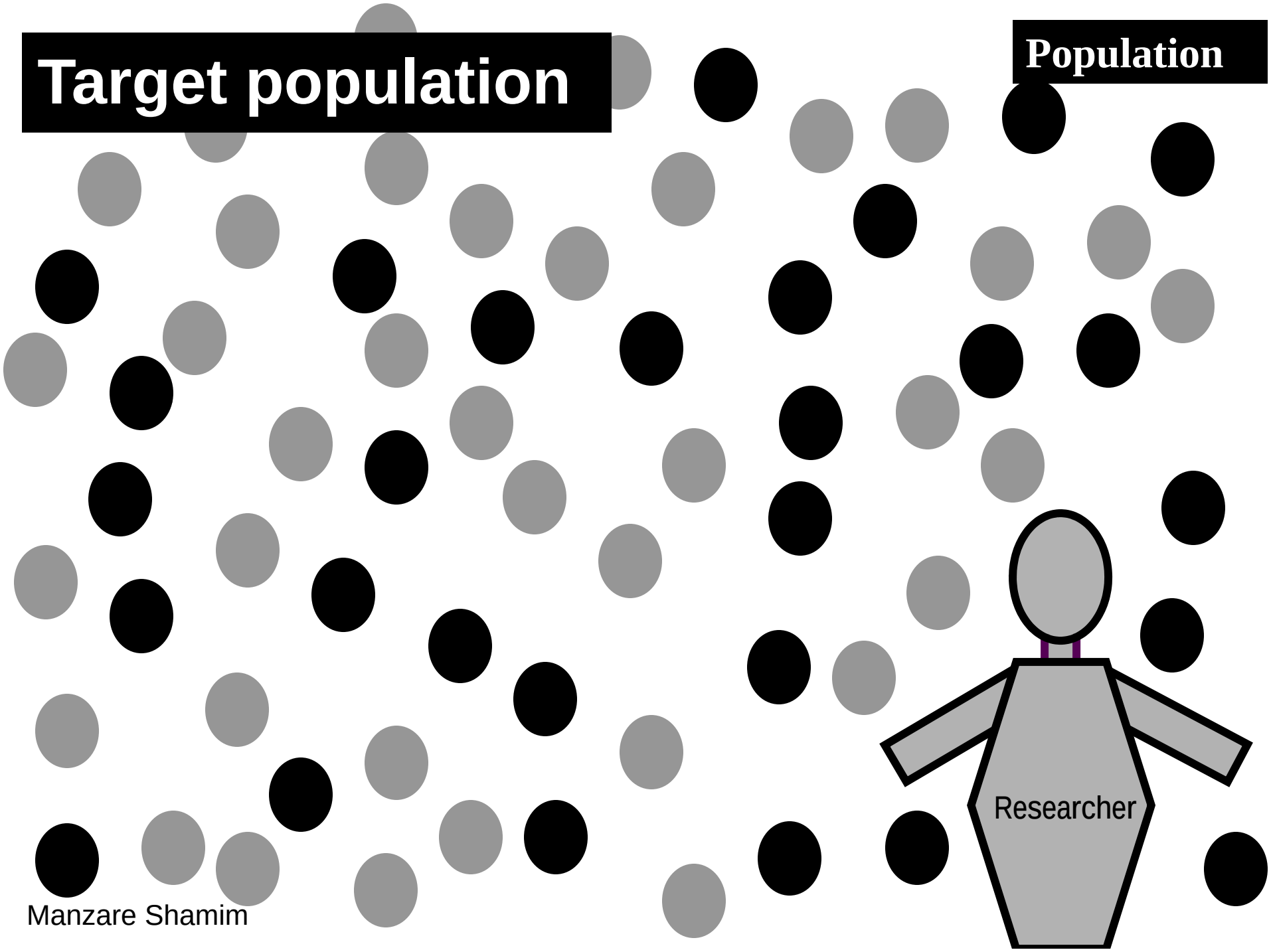
Population

g‡b Kiv hvK,
GKRb researcher
GKUv community-i Ici M‡elYv Ki‡eb|

c‡ii slide-G Kv‡jv oval-iv n‡jb females,
QvB i‡Oi oval-iv n‡jb males.
Dwb females-Gi Ici KvR Ki‡eb|

Ii M‡elYvi djvdj
H female population-Gi Rb¨ c‡hvR¨|
ZvB females are her/his ‘target population’.

Target population



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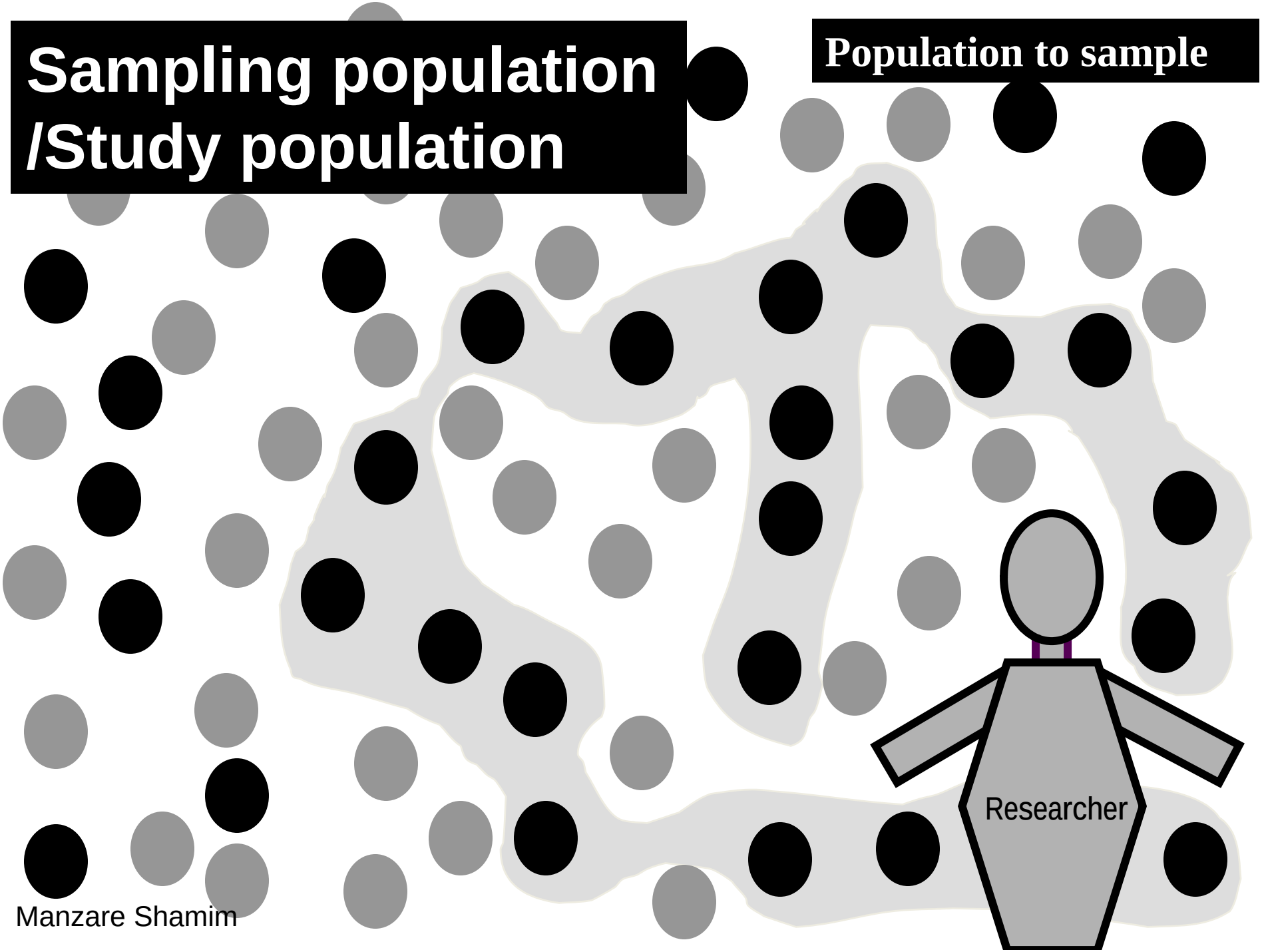
Population

wKš me female-†K include Kiv Ii mv‡a¨i evB‡i|

Ii hvIqv-Avmv Avi Ab¨vb¨ mweavi g‡a¨ Dwb
hv‡`i ga¨ †_‡K participants evQ‡Z cvi‡eb,
Zviv Ii ‘sampling population’ ev ‘study population’.
G‡`i c‡Z¨K‡K Avevi ejv n‡e G‡KKwU ‘sampling unit’.

GKwU study population-Gi g‡a¨
†h-me participant-†K Dwb evQ‡jb
we‡klI †Kv‡bv sampling technique
e¨envi K‡i (arrow †`Lb),
Zviv mevB wg‡j n‡jb Ii M‡elYvi ‘sample’.

Sampling population /Study population



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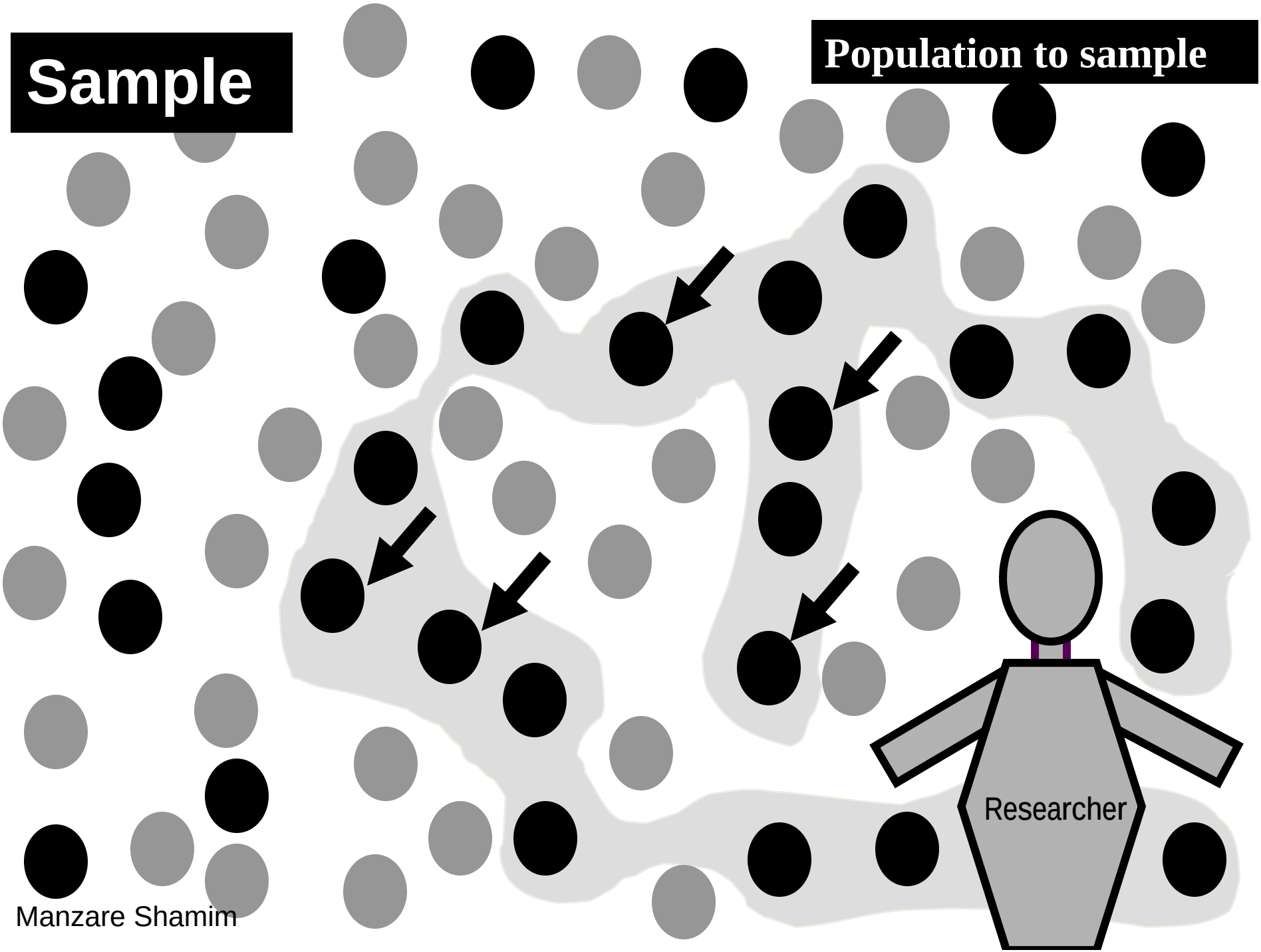

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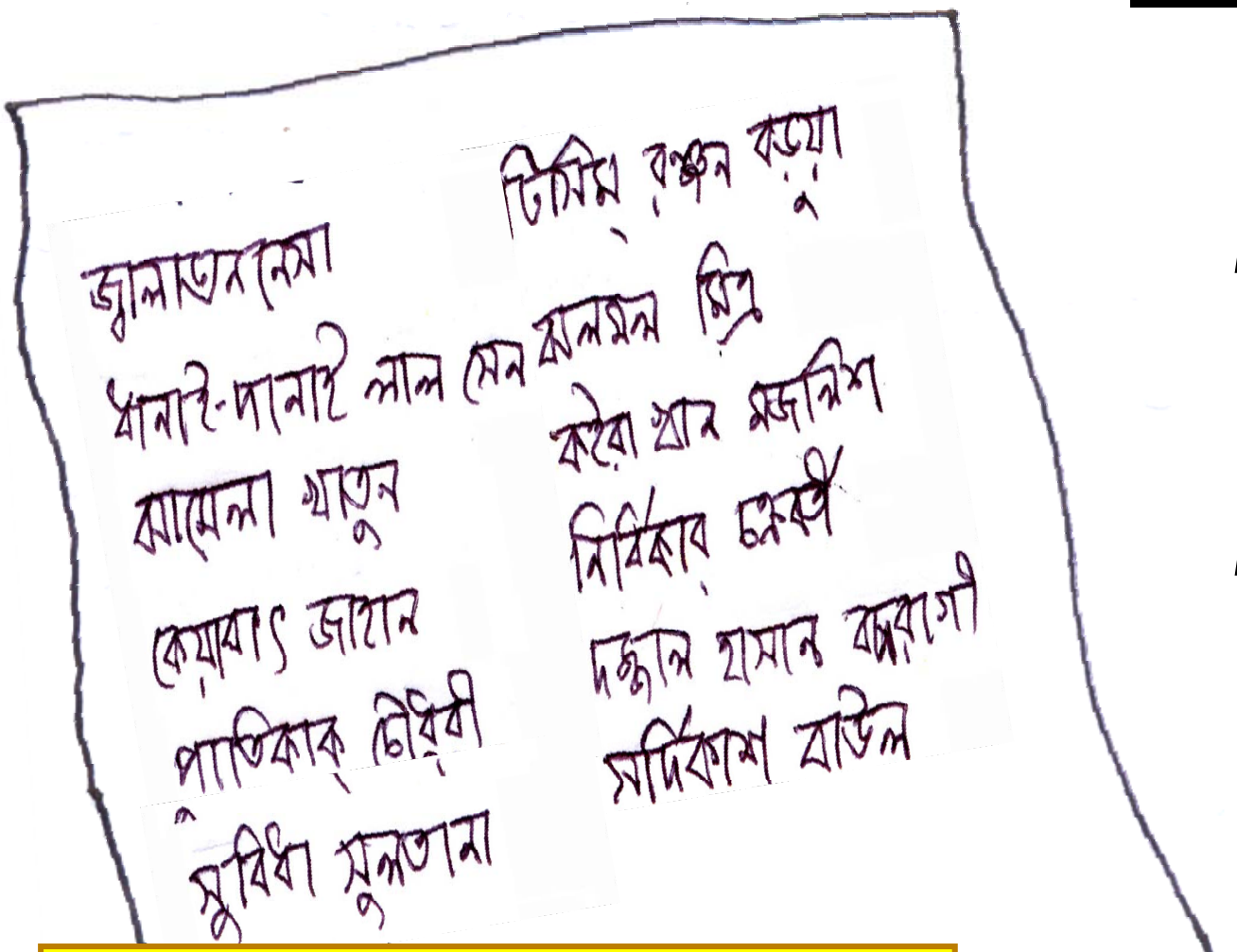
Population to sample

hw` Avcwb GKUv population-Gi †Kv‡bv Ask‡K Ggbfv‡e cvb †h mevi bvg (ev bed no., ID no. ev †miKg wKQ) Rvbv _v‡K hv w`‡q c‡Z¨K‡K †Pbv hvq, Z‡e †mB Zvwjkv‡K eje ‘sampling frame’.

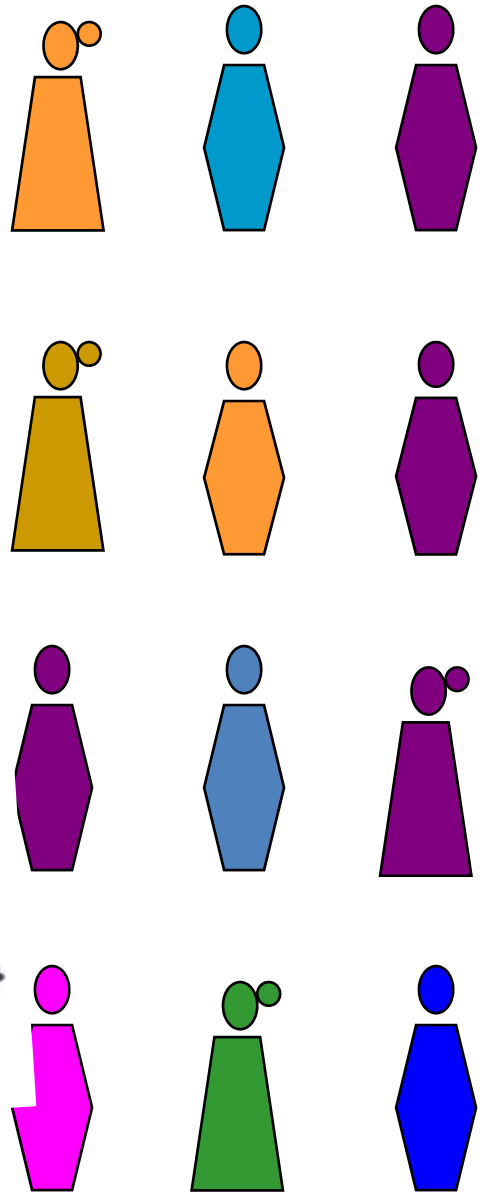
Simple random sampling (SRS)-Gi Rb¨ GwU eva¨Zvq|

Zvwjkv †_‡K mivmwi ev Zv‡K serial number-G cwiYZ K‡i random sampling Kiv hvq|

Population to sample



Sampling frame



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Population to sample

AvDU‡Wv‡i cwZw`b iæMx †`L‡Z _vK‡j Avcwb sampling frame cvb bv|

wKš aiv hvK,

GKUv RvqMvq health education wb‡Z ev training wb‡Z (‡hgb GLv‡b) GKm‡½ wKQ gvbl nvwRi Av‡Q;

†mB †ÿ‡Î wKš sampling frame cvlqv hv‡”Q-†mB õwKQ gvblõ-Gi Zvwjkv Uv|

Population to sample: wbR¯ †bvU

Population to sample: wbR¯ †bvU

Variable

Population-Gi †h characteristic-Uv
¯vb-Kvj-cvÎ‡f‡` vary Ki‡Z cv‡i,
Zv-B variable.

D`vniY:
Numerical (msL¨vmPK): weight, parity etc.
Categorical (‰ewkó¨mPK): male/Female
diabetic/non-diabetic etc.

Numerical variable: Continuous

Examples: **Height**

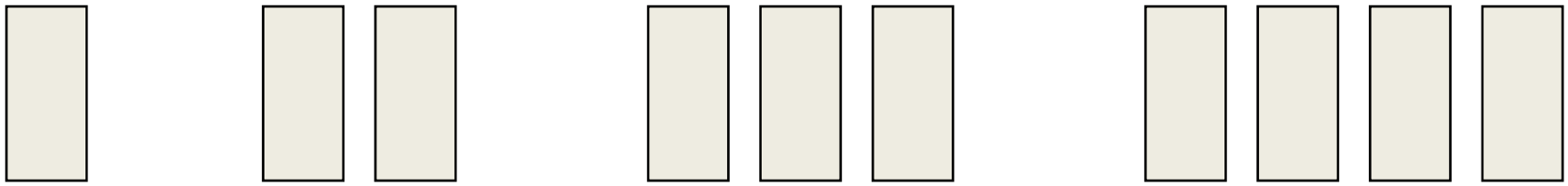
Body mass index (BMI)

Serum creatinine level

Platelet count

G¸‡jvi †ÿ‡Î whole number-G ev fMvs‡k data cKvk Kiv hvq|

Numerical variable: Discontinuous



<u>Examples:</u> **No. of teeth with caries**

Consciousness score

Days in hospital

G¸‡jvi †ÿ‡Î ïagvÎ whole no.-G data cKvk Kiv hvq|

Categorical variables: Nominal

(bvg Abhvqx)

Examples of nominal variables

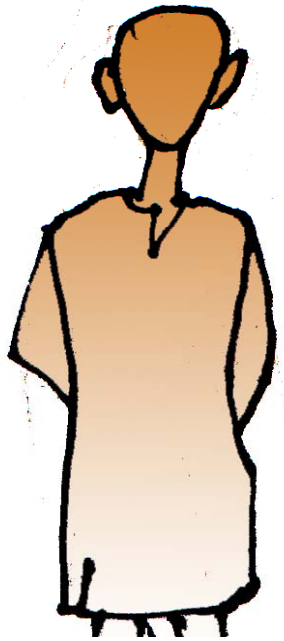
(as findings, not as populations):

eqm ev **value** bq,
Zv‡`i **category**

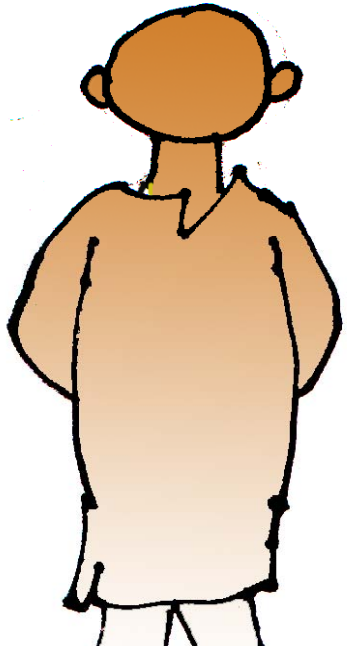
- **Child under 5 / Child at 5 & above**
- **Pain / No pain**
- **Normal cholesterol / High cholesterol**
- **Trained/Not trained**

Categorical variables: Ordinal

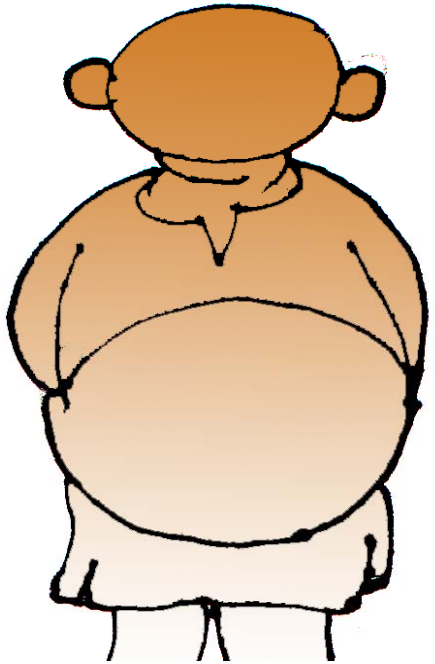
(Order Abhvqx)



Underweight



Normal



Overweight

Examples of ordinal variables

(as findings, not as populations):

- Mild pain / Moderate pain / Severe pain

- Benign tumour / Low-grade malignant tumour / High-grade malignant tumour

Income-Gi A¼_bq,
income-Gi category

- Lower class / Middle class / Upper class

Variable

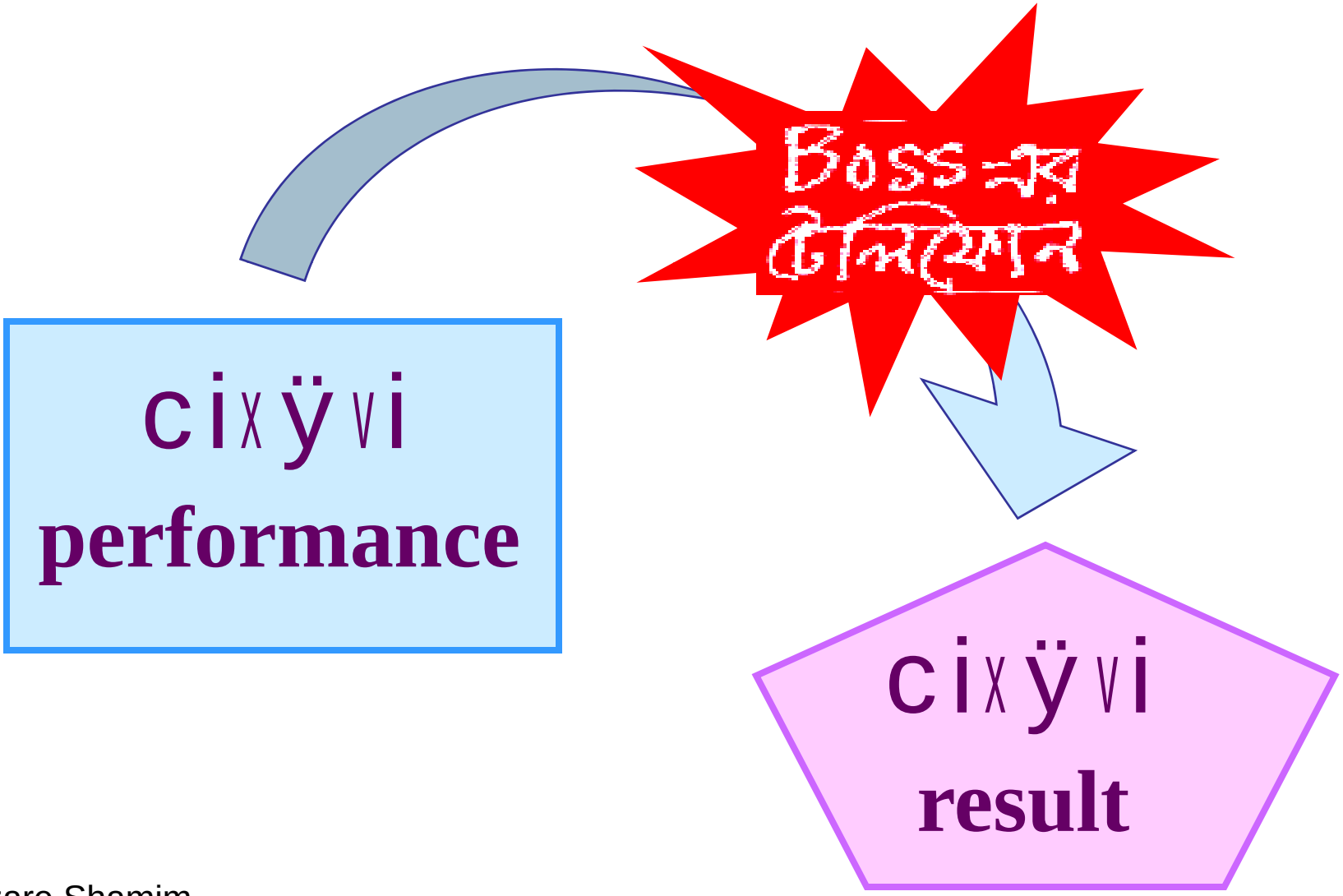
Av‡Mi slide¸‡jv‡Z †`LwQ,
male-female, lower class-higher class….
G‡`i variable wn‡m‡e †`Lv‡bv n‡q‡Q,
population wn‡m‡e bq|

Population wn‡m‡e (KL‡bv ev group wn‡m‡e)
male Avjv`v, female Avjv`v|

wKš GKUv mixed-sex population-Gi data wb‡Z wM‡q
hLb c‡Z¨K indivividual-Gi sex Rvb‡Z PvBe,
ZLb †mUv‡K variable eje|

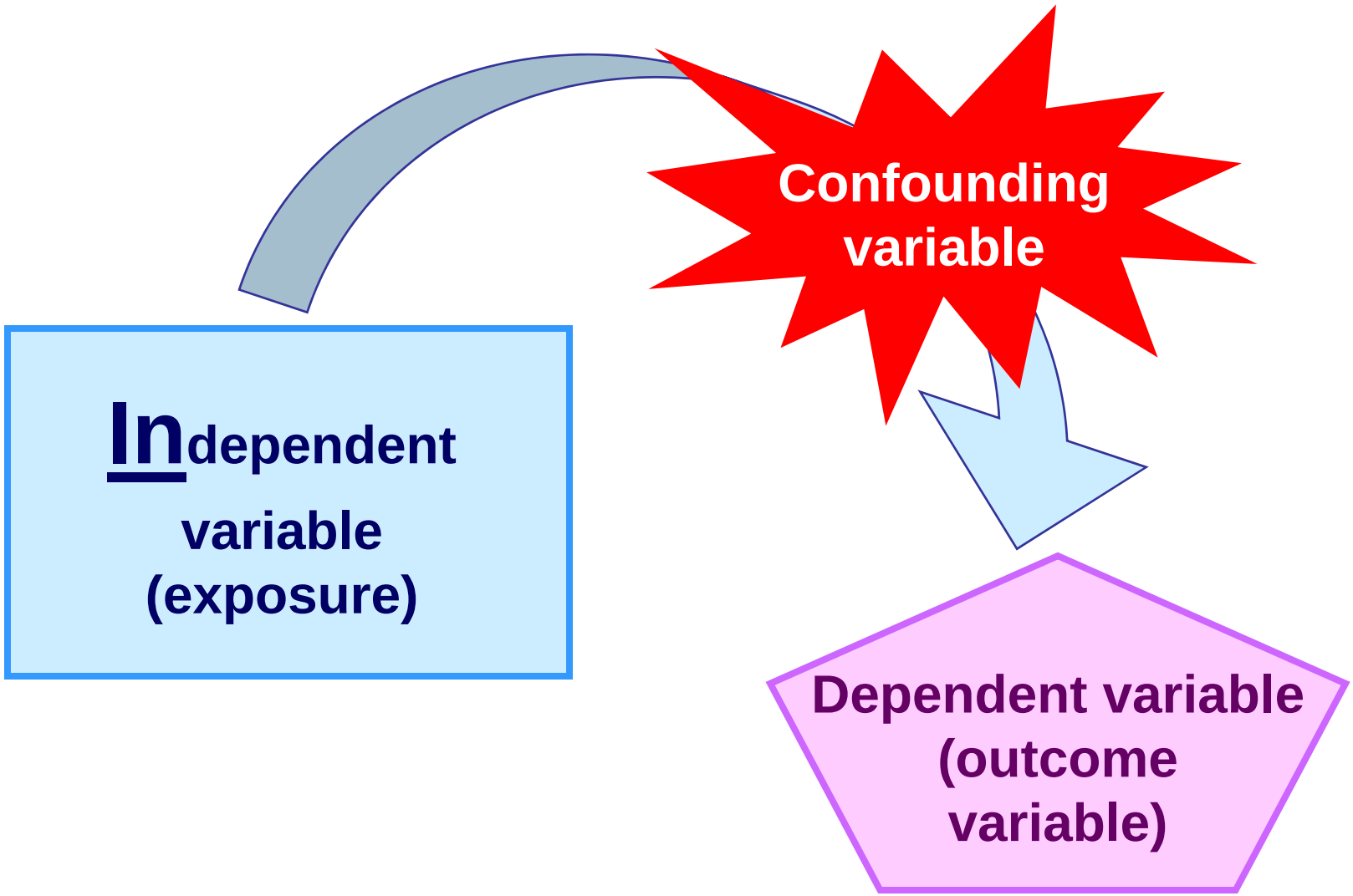
Variable

GKUvi mv‡_ Av‡iKUvi m¤úK© w`‡q
variables express Kiv:



GKUvi mv‡_ Av‡iKUvi m¤úK© w`‡q I variables express Kiv hvq

Variable



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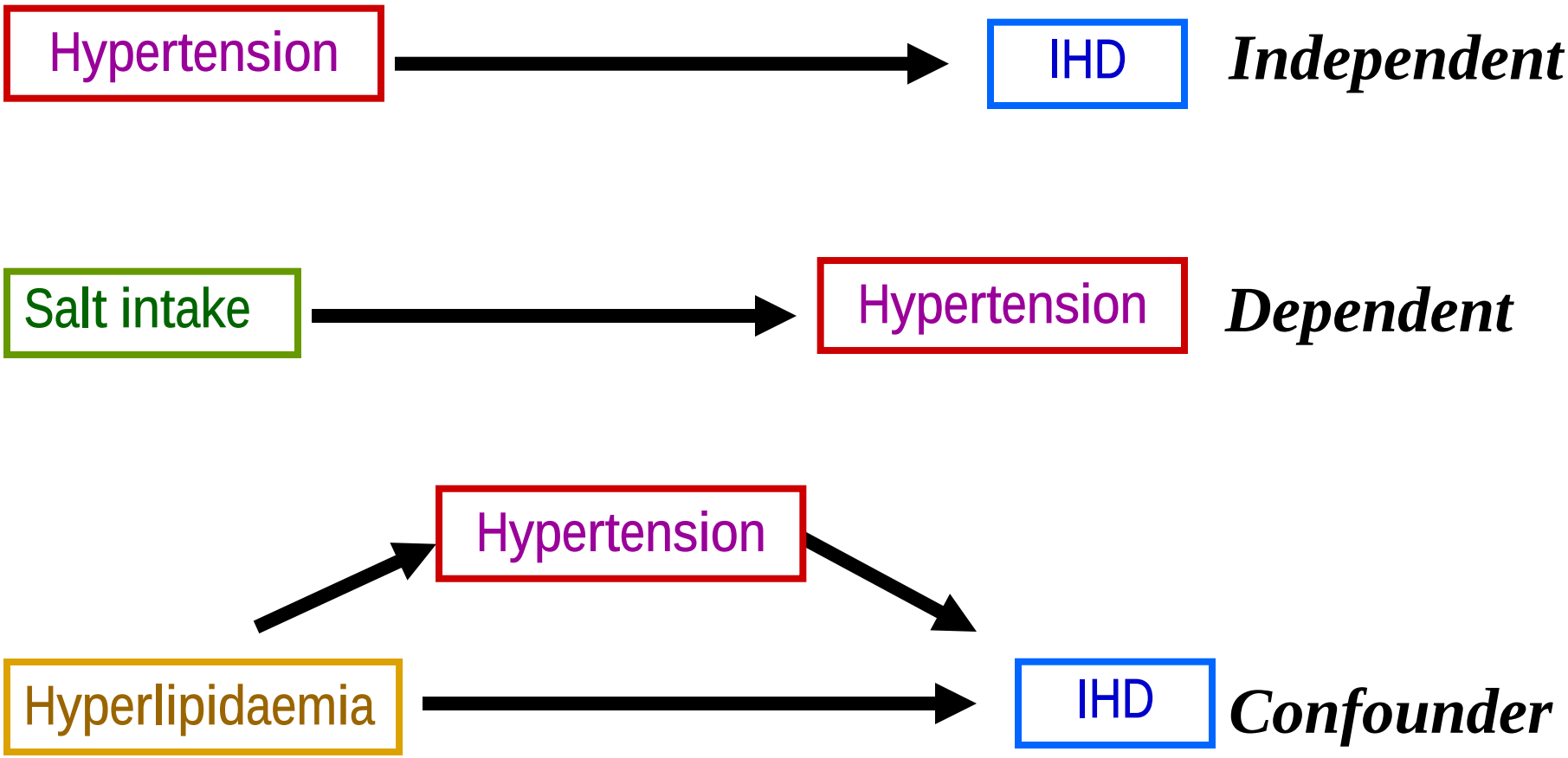
Variable

Hypertension as a variable



Variable

GB m¤ú‡Ki e¨vcviUv Le c‡qvRbxq|

Av‡Mi slide-G
GKwU specific finding ev trait (hypertension)-‡KB variable wn‡m‡e wewfb m¤úKwfwËK bv‡g wPwýZ Kiv n‡q‡Q:

“Independent”

“Dependent”

“Confounder”

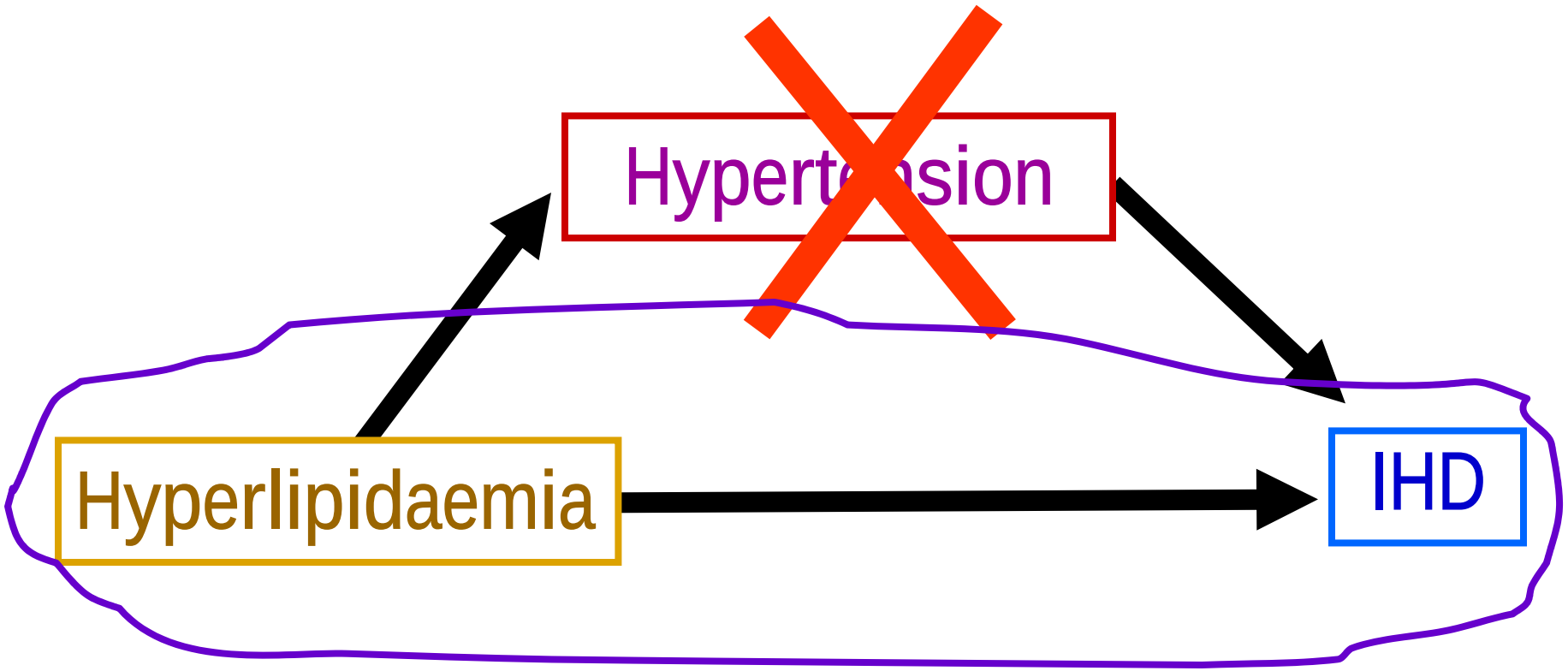
Variable

aiv hvK, ZZxq †¶‡Î M‡el‡Ki B‡”Q wQj IHD-i m‡½ hyperlipidaemia-i m¤úK †`Lvi| wKš wZwb †Lqvj K‡ib wb †h

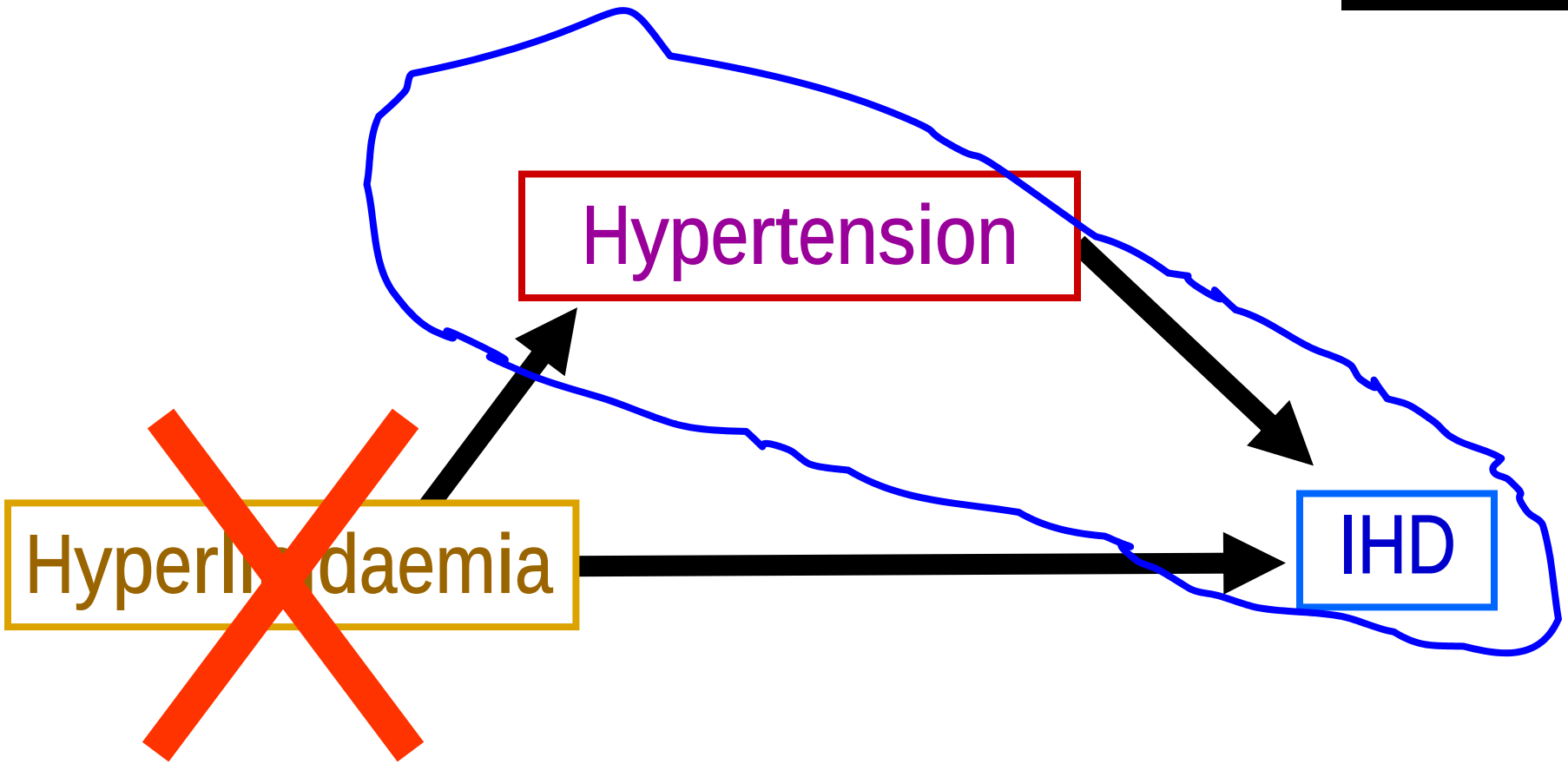
hyperlipidaemia-i m‡½ hypertension-Gi Ges hypertension-Gi m‡½ IHD-i m¤úK i‡q‡Q|

ZvB:

Confounding variable ev` w`‡q population evQb



Variable



Confounding variable wKš
independent Ges dependent, `ñai‡bi variable-‡KB
affect Ki‡Z cv‡i|

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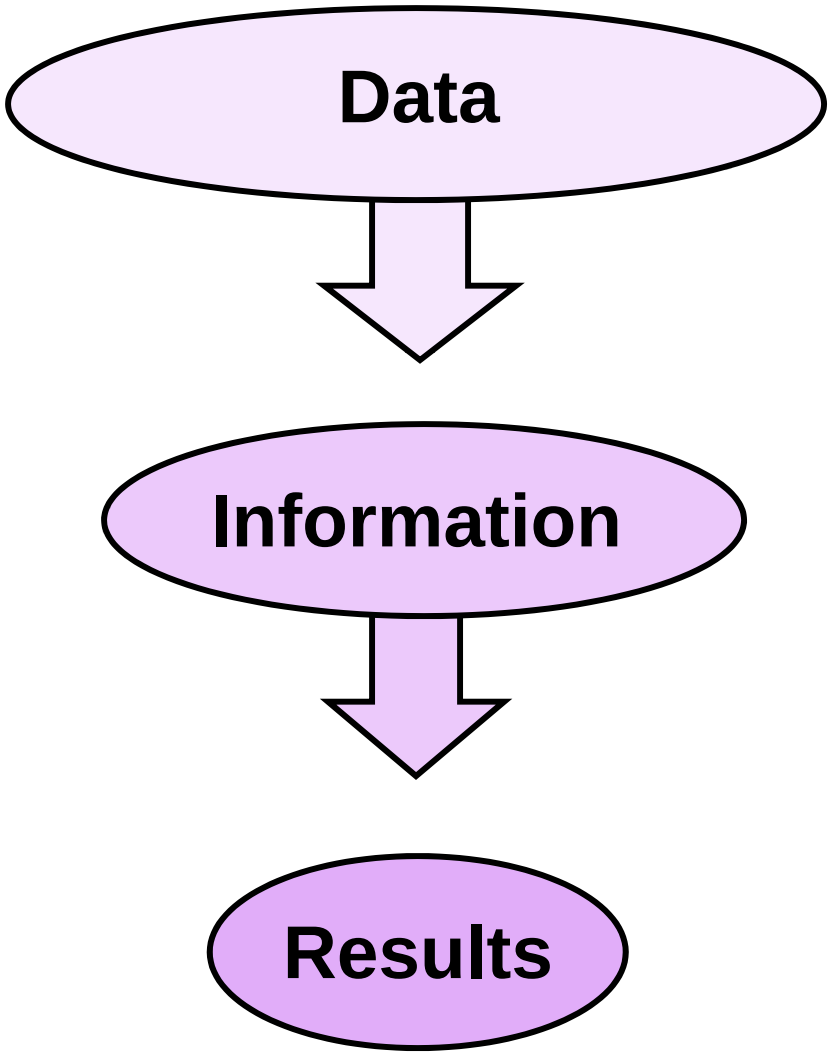
Data

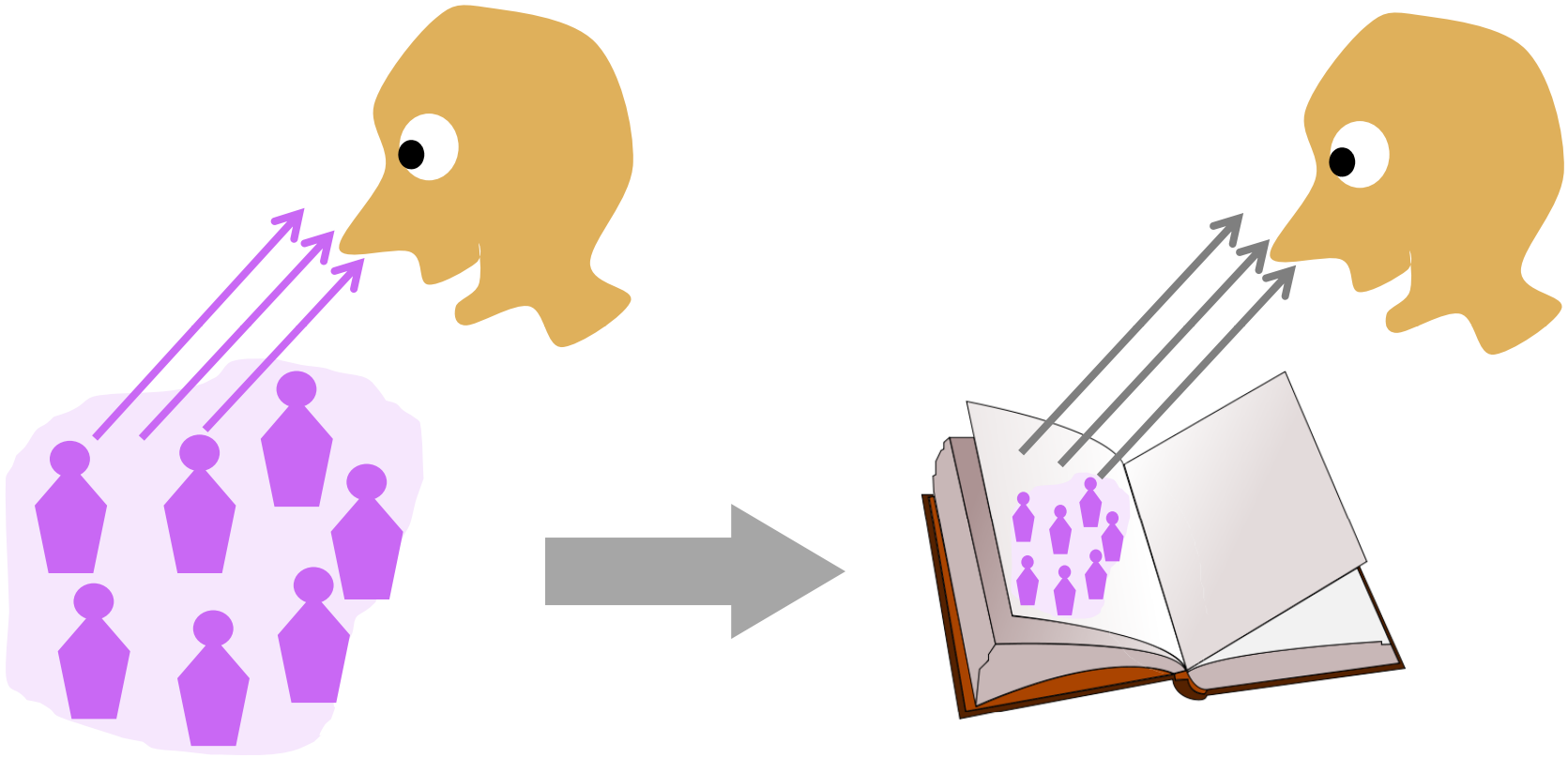


Factual material that is collected, observed, or created

Data processed, organised, structured or presented in a given context so as to make them useful

Information interpreted for answering research question(s)

Data



Primary data

Secondary data

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Av‡Mi slide-wUi

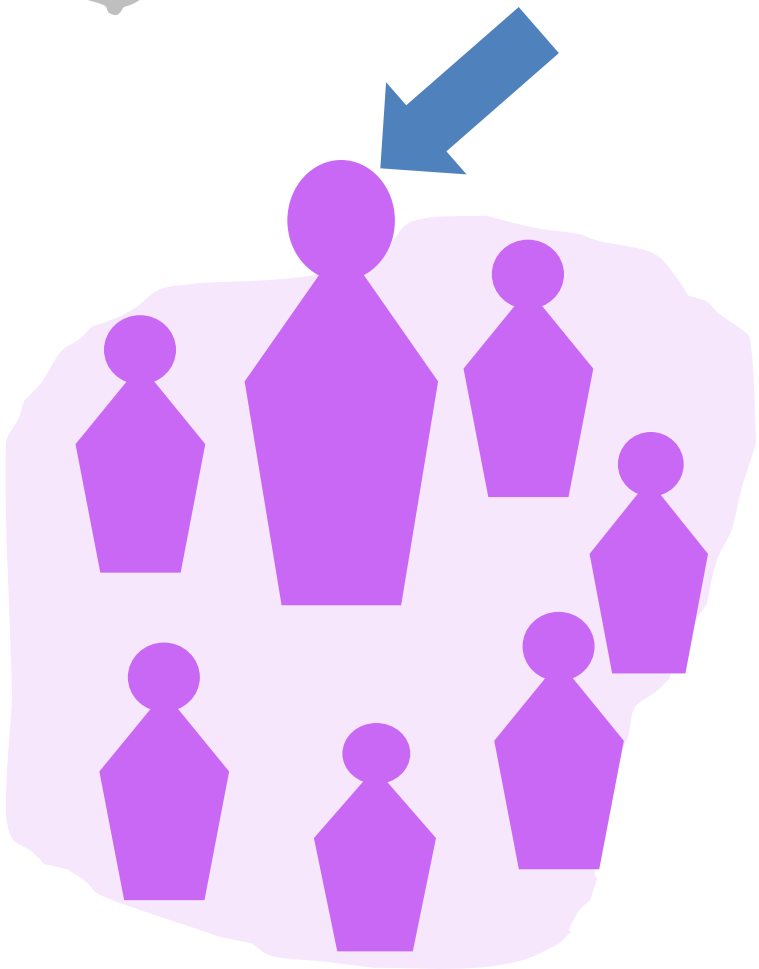
c_g Qwe‡Z researcher wb‡RB (1st-hand)
data collect Ki‡Qb|

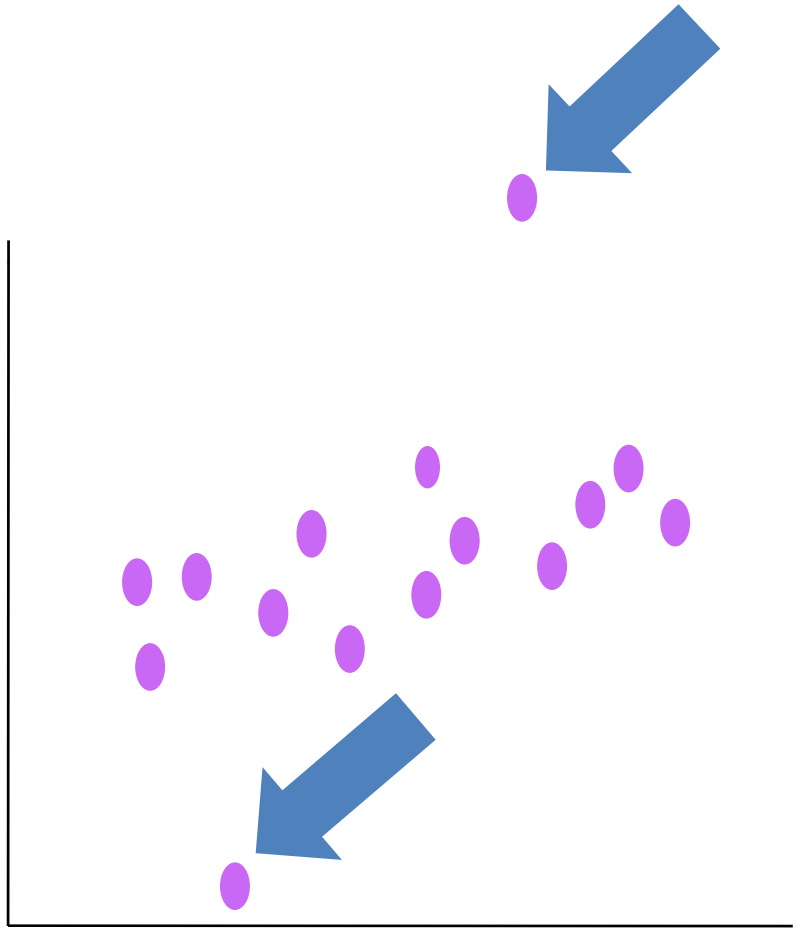
wØZxq Qwe‡Z researcher already existing
(2nd-hand) data collect Ki‡Qb|

c‡ii slide-wU‡Z “outliers” ej‡Z †evSvb n‡q‡Q
data very distinctly different from
(incompatible with)the main body of the data.

Av‡MB ejv n‡q‡Q †Kb “outlier”-M‡jv‡K
†_‡K ev` †`qv †h‡Z cv‡i|

Outliers





Exposure

Naturally ev experimentally

GKRb research participant
ev GKUv research object-Gi Ici
†h me wRwbm, NUbv ev wel‡qi
cfve (effect) co‡Z cv‡i ev †djv †h‡Z cv‡i
†m¸‡jv‡K exposure e‡j|

Exposure

mvavi Y fvlvq A‡bK mgq G‡`i
cause ejv n‡q _v‡K|

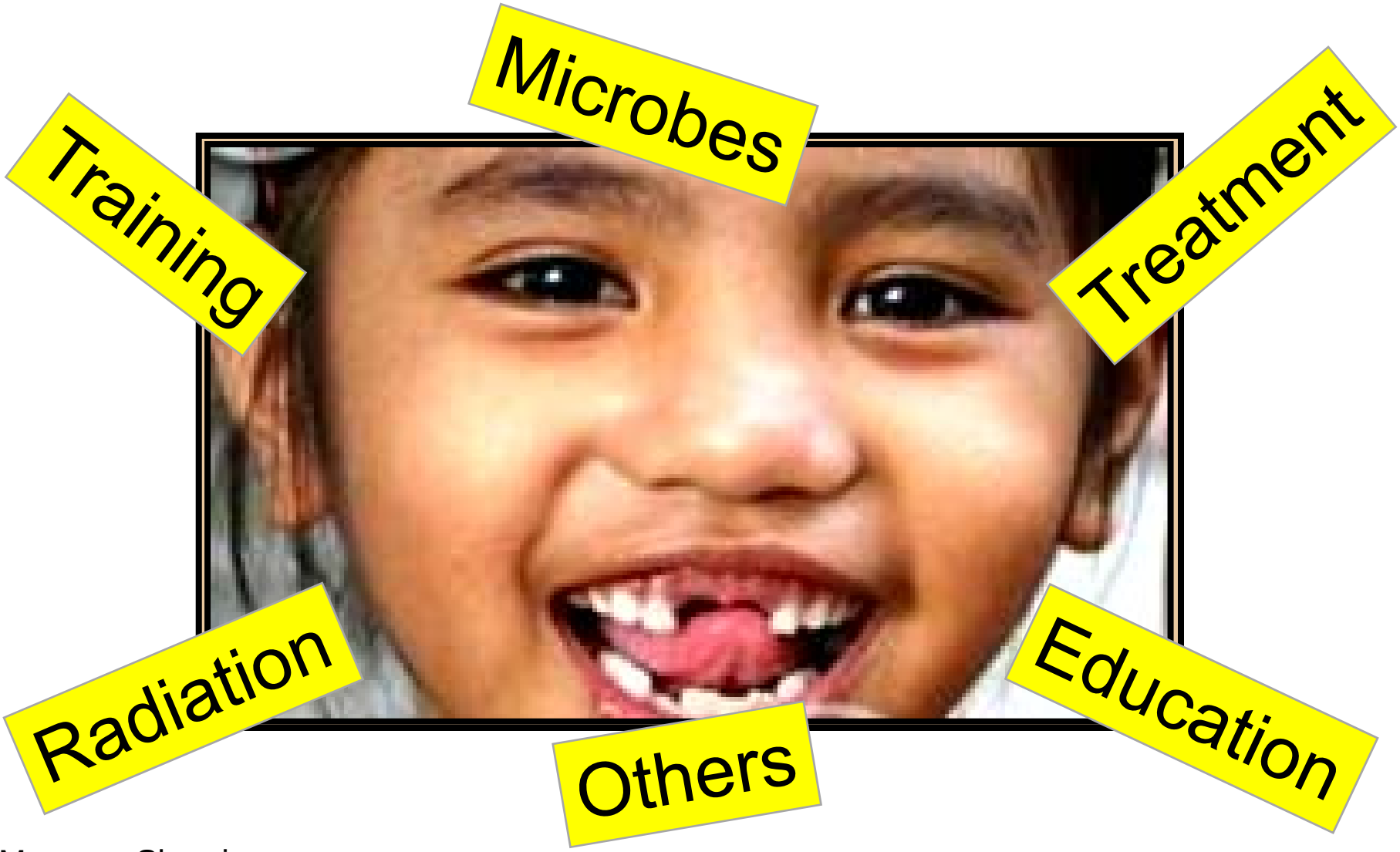
wKš
`Õ‡Uv ‰ewkó¨ ev phenomenon-Gi
association-gv‡Î B causal relationship bq|

Association Av‡Q, wKš GKUv Av‡iKUvi cause bq,
Ggb D`vniY eû cvlqv hvq:

†hgb: diabetes mellitus Ges life style.

Exposure n‡Z cv‡i bvbv iKg| †hgb:

Examples of EXPOSURE



Exposure: wbR¯ †bvU

fv‡jv research-Gi ˆewkó¨ Kx

Research question / research hypothesis	→	**Clearly thought out**
Research design	→	**Appropriate**
Sampling technique	→	**Correct**
Use of statistics	→	**Relevant**
Interpretation of data	→	**Unbiased**

GUv g‡b ivL‡Z †kLv‡Z n‡e ‡h M‡elK wn‡m‡e

Avgvi M‡elYvi `ejZv (hw` wKQ _v‡K Z‡e Zv)
Avgv‡KB identify Ki‡Z n‡e|

cvi‡j †m¸‡jv `i Ki‡Z n‡e,
bB‡j D‡jøL Ki‡Z n‡e mZZvi mv‡_|

e‡S-ï‡b †Kv‡bv ai‡bi confusion mwó Kiv Pj‡e bv|

weÁvb‡K dwK †`qv,

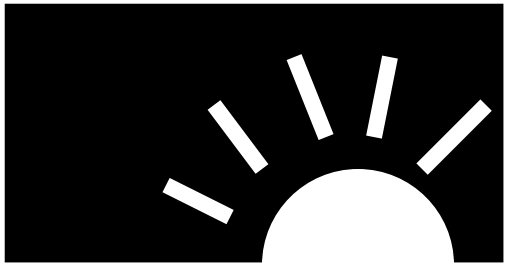
gvbl‡K dwK †`qv- **CVC**|

fv‡jv research

iex›`bv_ †hgb e‡j‡Qb:

Avgvi Avavi fv‡jv,

Av‡jvi Kv‡Q wewK‡q †`‡e Avcbv‡K †m||



Av‡jv‡i †h †jvc K‡i Lvq
†mB Kqvkv me‡b‡k||

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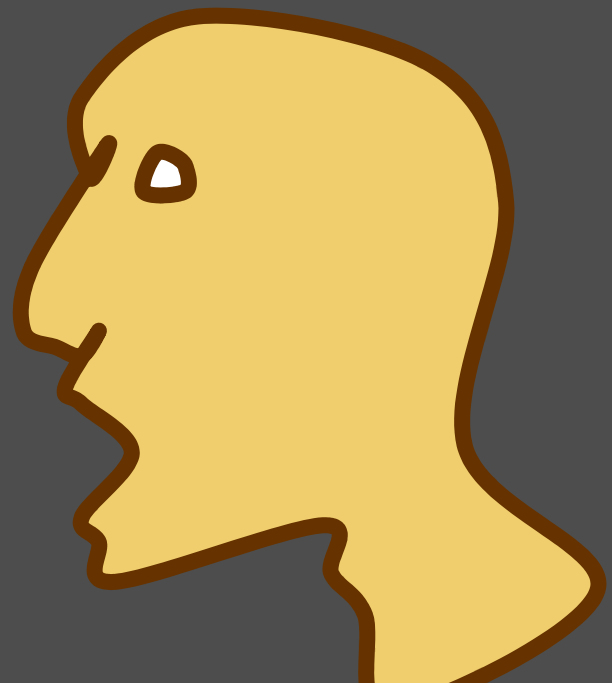
ZvB
research report/article-Gi fvlv
Ggb fv‡e select Ki‡Z n‡e
†hb †mUv GKUv cvgvY¨ `wjj n‡q I‡V|

fv‡jv, g›` me w`‡Ki we‡ePbvq
†mUv ‡hb
GKUv comprehensive nature cvq|

f v‡j v **research**

I feel that.....
I believe that.....



GgbUv †hb bv nq

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wbQK hw³ nxb wekvm ev
emotional attachment-Gi e‡k bq,
research-Gi conclusion n‡e
evidence- Ges hw³-wbfi;
wb‡Ri Ges Ab¨‡`i findings, understanding Ges
already avaible postutations /suggestions
BZ¨vw`‡K wgwj‡q-wgwk‡q-SvwK‡q, challenge K‡i
^Zwi-nIqv GKUv gZ|

g‡b ivL‡Z n‡e
“could not be concluded”-I GKUv conclusion.

f v ‡ j v research

Ggb †hb nq

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me‡k‡l ewj

Avgiv hZB emotional nB bv †Kb,

Avgv‡`i cvY †d‡U †M‡j I
M‡elK wn‡m‡e Avgiv _vKe wbweKvi-
c‡ii slide-Gi †eovjUvi g‡ZvB
indifferent-
putting her feet
on both positive and negative aspects.

me‡k‡l ewj

In research,

be objective

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me‡k‡l ewj

Be objective in

Designing

Implementing

Interpreting

Reporting

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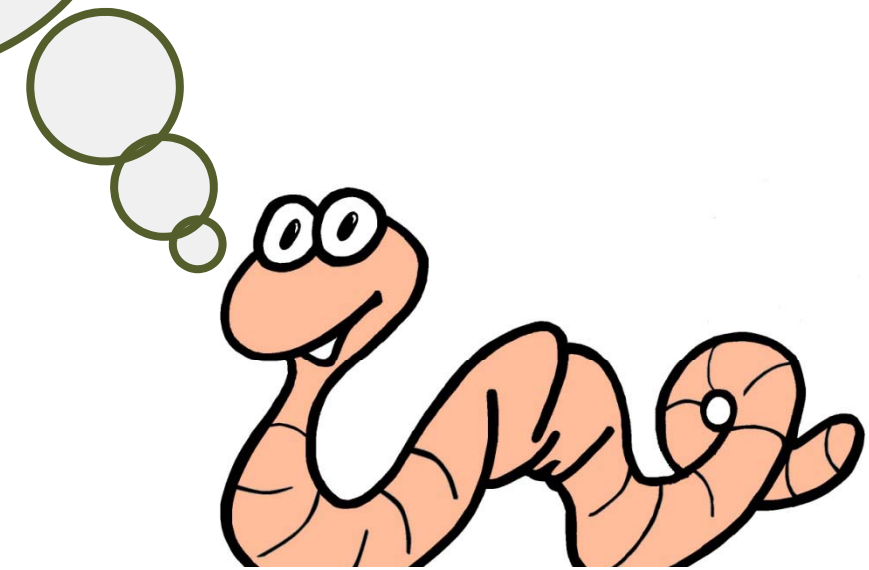
me‡k‡l ewj

আর খেয়াল রাখতে হবে:
common sense-টা
যেন বজায় থাকে
শুরু থেকে শেষ পর্যন্ত



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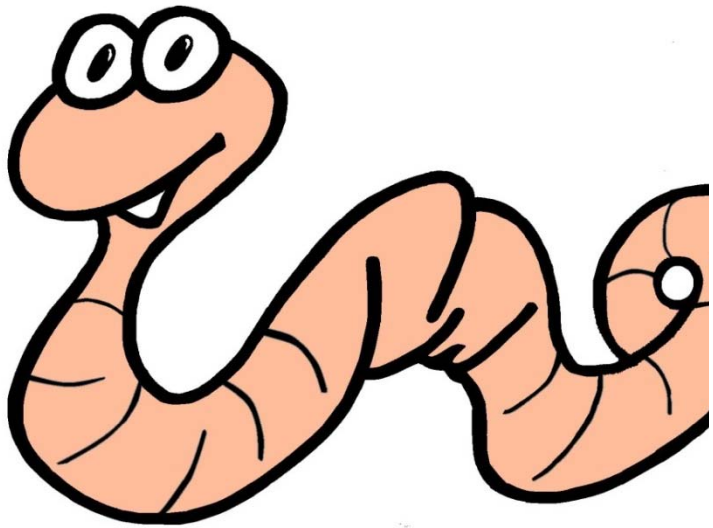
অনেক ধন্যবাদ



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wbR¯ †bvU

wbR¯ †bvU

wbR¯ †bvU

wbR¯ †bvU

c‡ii PviUv slide-G
†`qv n‡jv

WHO-recommended format
for a

RESEARCH PROTOCOL.

WHO-recommended format for a Research Protocol

Part 1

- **Project summary**
- **General information**
  - Protocol title, protocol identifying number (if any), and date.
  - Name and address of the sponsor/funder.
  - Name and title of the investigator(s) who is (are) responsible for conducting the research, and the address and telephone number(s) of the research site(s), including responsibilities of each. ***(Contd.)***

http://www.who.int/rpc/research_ethics/format_rp/en/

Protocol format

- Name(s) and address(es) of the clinical laboratory(ies) and other medical and/or technical department(s) and/or institutions involved in the research

- **Rationale & background information**
- **References (of literature cited in preceding sections)**
  References can also be listed at the end of Part 1.
- **Study goals and objectives**
- **Study Design**

(Contd.)

http://www.who.int/rpc/research_ethics/format_rp/en/

Protocol format

- **Methodology**

  The most important part of the protocol.
  It should include detailed information on the interventions to be made, procedures to be used, measurements to be taken, observations to be made, laboratory investigations to be done etc.

- **Safety Considerations**
- **Follow-Up**
- **Data Management and Statistical Analysis**
- **Quality Assurance**
- **Expected Outcomes of the Study**
- **Dissemination of Results and Publication Policy**
- **Duration of the Project**
- **Problems Anticipated**

(Contd.)

http://www.who.int/rpc/research_ethics/format_rp/en/

Protocol format

- **Project Management**
- **Ethics**
- **Informed Consent Forms**

Part 2

- **Budget**
- **Other support for the Project**
- **Collaboration with other scientists or research institutions**
- **Links to other projects**
- **Curriculum Vitae of investigators**
- **Other research activities of the investigators**
- **Financing and Insurance**

http://www.who.int/rpc/research_ethics/format_rp/en/

c‡ii 3wU slide-G
Qovi gva¨‡g
Avgiv cUj Avi Kg‡ovi Zdvr †`L‡Z †P‡qwQ
GKRb RESEARCHER-Gi g‡Zv K‡i|

†`Lb †Zv,
fvlv¸‡jv wK Rxeb †_‡K Le `‡ii g‡b nq?

we‡kl K‡i ‡Lqvj Kiæb
underline-Kiv kã¸‡jv|
M‡elYvi mgq Gme kã‡K ¸iæZ w`‡Z †kLv‡Z n‡e|

we‡kl K‡i DISCUSSION-G
Gme k‡ãi Abw`Z e¨envi LeB Riæix|

evowZ wKQ

Research

wK Le ¸iM¤xi e¨vcvi?

(†mUv ‡h bq, Zv Gfv‡e †evSv ‡h‡Z cv‡i)

Manzare Shamim

evowZ wKQ

†`L‡Z †P‡qwQ-

cUj Ges Kg‡ovi gv‡S Zdvr †Kgb †mBUv|
Av‡MB †R‡bwQ- G jvB‡b KvR ‡Zgb GKUv †bB, Zv|

†Lqvj †i‡LwQ fv‡jv ev g›` †Zj-gkjvi ¸‡Y bq,
wb‡R‡`i ¸‡Y A_ev †`v‡lB nvi-bq-wRr †hb nq|

hw` I G‡`i mvB‡R Zdvr- †mUvB mevB †c‡q‡Qb
ccjwwiwU‡Z †KvbUv †h e‡ov †mBUv‡Z †Nvj †L‡q‡Qb|

GUv †evSv hvq gvs‡mi mv‡_ Kg‡ov wKQUv fv‡jv hvq
Avi lB w`‡K cU‡ji mv‡_ gvQ fv‡jv Kv‡U ivbvq|

Manzare Shamim

evowZ wKQ

GUv Rvbv Av‡Q- `'‡UviB wewPi fZv evbv‡bv n‡q‡Q,
G e¨vcv‡i Ze Kg‡ovi wewP wKQUv GwM‡q i‡q‡Q|

†gv‡Ui Ici mvB‡R Ges †kB‡c hw` I `ÕiKg,
Ab¨ e¨vcv‡i cUj Kg‡ov †KD bq ZZ †ewk-Kg|

hw` I Avgvi g‡b nq- GUv IUvi PvB‡Z g›`B,
wePv‡ii †ej¨v Awq wbDUvi- iwL bvB †Kv‡bv a›`B|

MÜ G‡`i †Kb Kg, ‡mUv GZw`‡b †evSv hvq bvB;
fwel¨‡Zi M‡elYv¸‡jv ‡mB jvB‡bI nIqv PvB|

Manzare Shamim