DEVELOPING A PROPOSAL

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Director of Postgraduate Studies

(PhD studies)
“a project should be planned so that a thesis can be written and submitted within three years of starting, so that submission within 3 years is the expectation and 4 years is the absolute deadline.”
Project Plan – overall

- Abstract
- Scope
- Background/Literature Review → framework of the study →
- Aims, Objectives and Hypotheses
- Subjects and Methods
  - a) Possible Pilots done
  - b) Include plan for Data Analysis
- Ethics – NHS related, animal studies, other
- Project ‘Management’
  - a) Supervisors (CVs, also own), Team,
- Timetable & Funding
- References
PREPARATION OF THE RESEARCH PLAN

(Full proposal: ....Table of contents, list of tables, figures, appendices.. )

1. Background and literature review – previous research relating to the topic

- Describe briefly the history of the topic (scope) identifying key landmarks studies which indicate the methodologies used and arguments made (EXAMPLE) !!

- Show the major issues or practical problems to identify the GAP you intend to look at in your research

- Then indicate what will be some likely research questions (for qualitative research) or hypotheses (for quantitative research)

- If necessary, show how key terms have been defined, operationalised, used

- Aim to show what contribution your research will make to the literature – “Significance of the research nationally and internationally”
1. Background and literature review – previous research relating to the topic

• Describe briefly the history of the topic (scope) by identifying key landmarks studies which indicate the methodologies used and arguments made (EXAMPLE)!!

(HOW STRONG IS THE EVIDENCE?)
FETOMATERNAL ENVIRONMENT & INHERITANCE

FETAL HORMONAL / NUTRITIONAL MILLIEU
- glucocorticoids, insulin, androgens, leptin etc.
- insulin like growth factor

MATERNAL
- smoking
- drinking
- nutrition
- diseases (e.g. PIH)
- stress, SES

GENETIC, EPIGENETIC MARKERS
ADCY5....

FETAL GROWTH

• Variation in fetal growth markers at birth
• Changes in organ function, metabolism

→ Later hormonal/metabolic milieu – programmed *in utero*?

FAMILY / OWN BEHAVIOUR
- diet
- smoking
- alcohol
- exercise

SOCIO-ECONOMIC CIRCUMSTANCES
- education / training
- marital status
- housing
- income / wealth

CHILD / ADULT HEALTH AND WELLBEING
- insulin resistance
- type 2 diabetes
- dyslipidemias
- obesity
- Coronary disease
- Stroke
- OTHER!

NEXT QUESTION - WHAT IS THE EVIDENCE? WHAT ARE THE MECHANISMS?

DRAW THEORETICAL FRAMEWORK: Life course factor model
EARLY OBSERVATIONS LEADING TO “THE PROGRAMMING HYPOTHESIS” - How strong is the evidence?

Fig. 2 Correlation between mortality from arteriosclerotic heart disease, 1964-67, in men aged 40 to 69 years (standardised rates/100,000 population) and infant mortality rates 1896-1925.

A. Forsdahl 1977
BARKER, Osmond (1986). The Lancet, Sept 7: 1077-81

REPLICATED FORSDAHL’S STUDY


…….AND WENT FURTHER…..

IHD deaths

BW – “landmark paper published”
1. Background and literature review – previous research relating to the topic

- Describe briefly the history of the topic (scope) identifying key landmarks studies which indicate the methodologies used and arguments made

- Show the major issues or practical problems to identify the GAP you intend to look at in your research!!

GAP GAP GAP……
“Barker hypothesis” presented mainly based on historical cohort studies from the UK –
Pathogenesis of CVD originates from foetal life as a result of maternal under-nourishment and “programming” of cellular functions of the foetus, since then…….
Hundreds of papers have been published – controversial evidence \( \rightarrow \) “Barker hypothesis” repeatedly questioned – role of confounding! (“GAP to fill in”)

- More to Come?
- Behavioural disorders
  - ADHD
- Schizophrenia
- Focus in CVD!
- Asthma, Infections, Immune system
- Metabolic disease and intermediate disease markers
  - BP
1. Background and literature review – previous research relating to the topic

- Describe briefly the history of the topic (scope) identifying key landmarks studies which indicate the methodologies used and arguments made

- Show the major issues or practical problems to identify the GAP you intend to look at in your research

- Then indicate what will be some likely RESEARCH QUESTIONS (for qualitative research) and/or HYPOTHESES (for quantitative research)
1. Background and literature review – previous research relating to the topic \(\rightarrow\) leads to aims, objectives and hypotheses !!! (SUMMARY of literature)

- Describe briefly the history of the topic (scope) identifying key landmarks studies which indicate the methodologies used and arguments made

- Show the major issues or practical problems to identify the GAP you intend to look at in your research

  .. Then indicate what will be some likely research questions (for qualitative research) or hypotheses (for quantitative research)

- If necessary, show how key terms have been defined, operationalised, used

- Aim to show what contribution your research will make to the literature – “Significance of the research nationally and internationally” - SUMMARISE YOUR LITERATURE REVIEW \(\rightarrow\) AIMS!!
IN MORE DETAIL: Some of the questions the review of the literature can answer

- What are the key sources?
- What are the key theories, concepts, and ideas?
- What are the epistemological and ontological grounds for the discipline?
- What are the major issues and debates about the topic?
- What are the political standpoints?
- What are the origins and definitions of the topic?
- How is knowledge on the topic structured and organized?
- How have approaches to these questions increased our understanding and knowledge?
<table>
<thead>
<tr>
<th>Source of Study Participants</th>
<th>Diagnosis number</th>
<th>Source of BW</th>
<th>Year of birth</th>
<th>Sample Size</th>
<th>Birth weight g/lb</th>
<th>Exposure definition/Confounding factors adjusted for in the analysis</th>
<th>Outcome</th>
<th>Direction of the association between BW and outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koupilova (104) 1999 Sweden</td>
<td>ICD 8-9: Record 410-414.9, 430-438.9</td>
<td>1920-24</td>
<td>1334M</td>
<td>n/a</td>
<td>1. - 3 BW in 4 categories</td>
<td>1. IHD 2. Stroke 3. All Circulatory diseases 4. Same as 3</td>
<td>4. RR 0.67 (0.50-0.89)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4. 1000g increase in BW</td>
<td>3. Neg., p for trend 0.006</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5. Like in 4 6. Like in 4 7. Like in 4, SBP, DBP, BMI 8. Like in 7 9. Like in 7 10. Like in 4 + sociodemographic characteristics and smoking</td>
<td>4. RR 0.47 (0.22-0.99) 5. RR 0.74 (0.52-1.05)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11. Like in 10 12. Like in 10</td>
<td>6. RR 0.49 (0.23-1.03) 7. RR 0.67 (0.49-0.90)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11. IHD 12. Stroke</td>
<td>8. RR 0.74 (0.52-1.06) 9. RR 0.70 (0.52-0.93)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11. IHD 12. Stroke</td>
<td>10. RR 0.78 (0.55-1.11) 11. RR 0.48 (0.23-1.03)</td>
<td></td>
</tr>
</tbody>
</table>

**Literature review (BW ~ CVD):** **Practical approaches to achieve these targets/CRITICAL ISSUE IS THAT HOW TO SUMMARISE THE LITERATURE?** (example adapted from Koupilova et al)
### Number of studies describing the association between birth weight and lipid values

<table>
<thead>
<tr>
<th>Age group</th>
<th>Number of studies</th>
<th>TC</th>
<th>HDL</th>
<th>LDL</th>
<th>TG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children (≤12 years)</td>
<td></td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Adolescents (13-17 years)</td>
<td></td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Adults (≥18 years)</td>
<td></td>
<td>21</td>
<td>19</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total number of studies</strong></td>
<td></td>
<td>33</td>
<td>29</td>
<td>21</td>
<td>31</td>
</tr>
</tbody>
</table>

HDL = High Density lipoprotein concentration, LDL = Low density lipoprotein concentration, TC = Total cholesterol concentration, TG = Triglyceride concentration
Thinking about starting to write –" as soon as possible"

- Plan
- Pre-writing: structuring your review
- Building up a first draft
- Writing a final draft

Write down the aims for the review
Summarize your main points, especially conclusions

Draft out an appropriate structure.
Use sectioning to arrange material relevant to your points.
Allocate appropriate evidence to sections
2. Aims, objectives and hypotheses

• **Aims**: general statements on the intent or direction for the research – where you intend to go; include reference to the methodological, practical and theoretical aims

• **Objectives**: specific, clear and succinct statements of intended outcomes from your research, for example, search and review of the literature and assessment of a debate; [schedule and *intermediate objectives* for the research]; [objectives in researcher training]

• **Hypotheses**: to be “tested”
EXAMPLE: Stressors during pregnancy and metabolic consequences for the offspring

• Aims: “general” statements!

The (central) aim of this proposal is to determine whether the stress-related “foetal programming” occurs in human populations, and to further our knowledge of the mechanisms underlying programming.

To achieve these targets we will examine the effects of infection-induced stress and exogenous glucocorticoids (GC) in pregnancy using longitudinal epidemiological data on cohort of human subjects.
Specific objectives are to:

1) Examine the associations between the occurrence and timing of infections during pregnancy and foetal growth patterns.

   Additionally, *the independent effects of this exposure on the subsequent metabolic outcome* (e.g. blood pressure, fasting insulin and lipid levels) will be examined.

2) Explore *the effects of exogenous glucocorticoids* (GCs) administered on average between 26th and 36th week of human gestation on foetal outcome (growth)
EXAMPLE: Stressors during pregnancy and metabolic consequences for the offspring

- The main hypotheses to be tested:

(1) Adverse events in pregnancy, such as intrauterine infection or exposure to exogenous GCs, cause long-term changes in key organs and tissues and, thereby, predispose the individual to deviant metabolic outcomes like adverse lipid and insulin levels etc.
3. Scope

• Explain in which kind of wider context your research falls in

• **State the limitations** for the research,

  for example, time period, language, subject areas, regions and sample along, with unit of analysis, for example, policy, programmes, behaviours – to emphasize that no claims for generalizability beyond these limits will be made
4. Subjects and methods

= A concise justification (!) for the methodological approach you intend to employ and what data collection and analytical techniques you will use

• Population and samples (sample size)

• Data collection, data collected

• Measures, standardization, quality control (laboratory and others)

• Analytic strategy and statistical methods

• Pilots conducted !!– to be conducted – methods, results

• Accuracy of the data, advantages – disadvantages, attrition analyses

• Ethical considerations
Justify / explain what will you do …

• Use of qualitative or quantitative approaches
• Use of an existing approach within an existing paradigm
• Give explanation of why alternative methodologies were rejected or not
• Explain the use of techniques for data/evidence collection
• Anticipated problems and issues, for example, ethics and access to data
• Indication of how the data will be analysed
• Any variables to be operationalised should be defined (e.g. composite variables)
• Provide references - also in methods!
5. Results and significance

• expected research results and their significance (results from the pilot; e.g. in the upgrade report, grant applications)

• practical applicability of the research results and their potential exploitation

• researchers are encouraged from the early stages of planning to establish whether the research might generate inventions that could have commercial application

• it is also advisable to establish the rights and obligations of the inventor within the research team as well as with the partners and funding body

• publication and other dissemination of the research results
6. Researchers and resources [not into the first thesis proposal]

- composition of the research team (management) and its division of labour, as well as possible division of the research among different sites

- links of the project with other research carried out by the researchers on the team – own contribution ("Declaration of own work" – needed in the thesis)

- other projects of the student/researcher (% spent in the project)

- researcher training, including arrangements for postgraduate instruction and supervision

- foreign cooperation within the project

- research environments: Identify any equipment that you will need for your research, for example, computing, access to special libraries or cost for the field visits; if using postal questionnaires estimate printing and postage costs.

- financial plan for the project !, including funding from all sources
7. Project Plan – other aspects

- **Ethics** – NHS related, animal studies, other

- **Timetable:**
  General indication of the timetable for completing the research; usually broken down into manageable segments, indicating the tasks necessary to complete each assuming that there are no problems. Often divided according to the sections in the dissertation. Include slippage time. You can present it graphically (GANTT chart).

- **References:** (PLAGIARISM!)
  All works cited in your proposal;
  Any materials that can support your justification or indicate your argument, for example, video.

  Include in this section letters from corroborating institutions that give you access to necessary data or people.
Abstract can be organised as follows (generic)

• name of the researcher in charge
• title of the project
• sum of funding applied for, number of person-years, and funding period
• site or sites of the research /setting
• background (shortly)
• objectives, hypotheses
• brief description of the project
• importance of the project

Generally the abstract must be no more than one page in length.

No separate abstract into the first thesis proposal [“6 weeks submission”]
AND TO HELP TO DO THE JOB....

Essential Study Skills
Tom Burns & Sandra Sinfield
Sage Publications 2012
Writing Your Thesis
Paul Oliver
Sage Publications
Ebook 2011, [2008]
ISBN: £18.99 (pbk)
Project Plan – Wrap-up

• Abstract

• Scope

• Background/Literature Review → framework of the study →

• Aims, Objectives and Hypotheses

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  • b) Include plan for Data Analysis

• Ethics – NHS related, animal studies, other (on the form)

• Project ‘Management’ (on the submission form)
  • a) Supervisors ([CVs], also own), Team

• Timetable & Funding

• References (x = needed for the first submission)