Quantitative Research Approaches

Dr Stephen Mason :

Palliative Care Unit, University of Liverpool

Aims

• Identify and explore the reasons behind the use of different quantitative study designs in palliative care

Objectives

• To recognise and identify common quantitative research designs in health care studies.
• Appraise the strengths and weakness of quantitative research design.

• Apply Quantitative Research Study designs to Clinical Problems.

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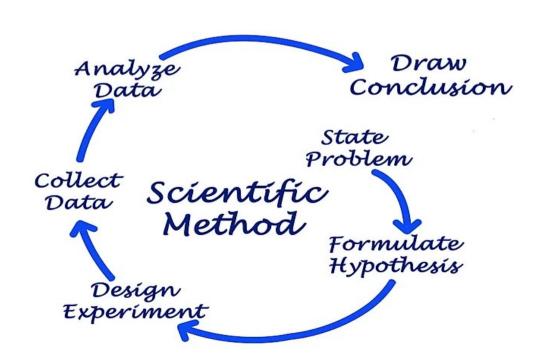attitude · communication · competence

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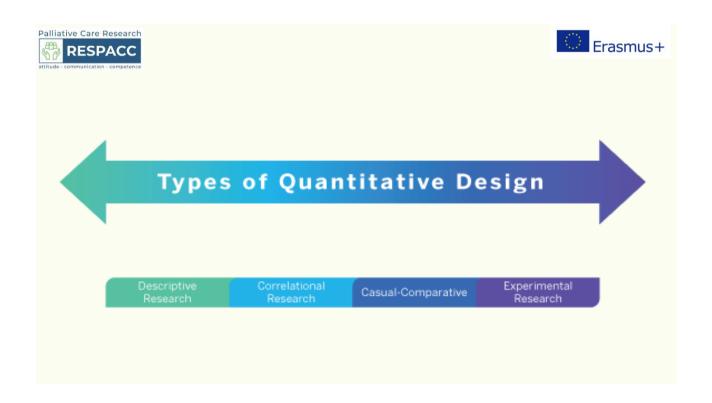
Quantitative Research

A formal, objective, rigorous, systematic process to explain phenomena by collecting and analysing numerical data

• Measures and examines selected variables
  • Describe
  • Relationships
  • Causation
• Uses a sub-sample from a population
• Data analysed using statistical methods
• Supports some types of research

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What types of research design…

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Types of Quantitative Design

Descriptive Research | Correlational Research | Casual-Comparative | Experimental Research

We're just starting to plan our evaluation. Which methods should we consider?

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- Are you looking to describe phenomena, or test relationships?
- Will theory or data come first?
- Are you relying on universal theory or local knowledge?
- What is the unit of analysis?
- Will your study be cross-sectional or longitudinal?
- Will you verify or falsify a theory?

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Descriptive Research

Describe characteristics within a group
 – frequencies, distribution, trends.
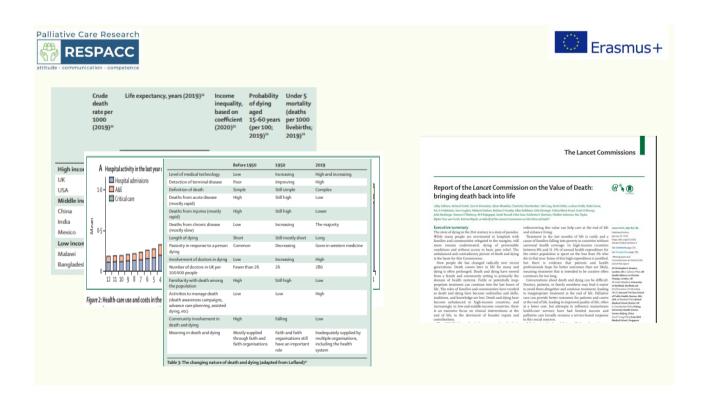Variables are measured (without manipulation)
Not hypothesis driven
- Causality?

Methods
    Surveys (Questionnaires / Interviews)
    Observation
    Case Studies
    Cohort?

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The Lancet Commissions

Report of the *Lancet* Commission on the Value of Death: bringing death back into life

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Objective
- describe the characteristics of palliative care team (PCT) consultations
- to investigate when and why PCTs are consulted.

Design:
- Cohort Study

Methods
- Sample – Adult PC Patients (476)
- Measures:
  - Questionnaires – Completed by Clinicians and PCTs
  - Patient Records

Results
- LE < 3 Months + Unplanned Admission
- Pain (56%), Care Plan (36%), Fatigue & Dyspnoea (27%)

The COMPASS study: A descriptive study on the characteristics of palliative care team consultation for cancer patients in hospitals

Arianne Brinkman-Stoppelenburg[1] | Suzanne Polinder[1] | Jetske Meerum-Terwogt[2] | Ellen de Nijs[3] | Annemiek van der Padt-Pruijsten[4] | Liesbeth Peters[5] | Maurice van der Vorst[6,7] | Lia van Zuylen[8] | Hester Lingsma[1] | Agnes van der Heide[1]

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Funding information

Abstract
Objective: To describe the characteristics of palliative care team (PCT) consultation for patients with cancer who are admitted in hospital and to investigate when and why PCTs are consulted.
Methods: In this descriptive study in ten Dutch hospitals, the COMPASS study, we compared characteristics of patients with cancer for whom a PCT was or was not consulted (substudy 1). We also collected information about the process of PCT consultations and the disciplines involved (substudy 2).
Results: In substudy 1, we included 476 patients. A life expectancy <3 months, unplanned hospitalisation and lack of options for anti-cancer treatment increased the likelihood of PCT consultation. In substudy 2, 64% of 550 consultations concerned patients with a life expectancy of <3 months. The most frequently mentioned problems that were identified by the PCTs were complex pain problems (56%), issues around the organisation of care (31%), fatigue (27%) and dyspnoea (27%). There was much variance between hospitals in the disciplines that were involved in consultations.
Conclusion: Palliative care teams in Dutch hospitals are most often consulted for patients with a life expectancy of <3 months who have an unplanned hospital admission because of physical symptoms or problems. We found much variance between hospitals in the composition and activities of PCTs.

KEYWORDS
descriptive study, hospitals, neoplasms, palliative care, palliative medicine, referral and consultation

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Aim:
- establish the likelihood of death within 12 months

Design:
- Prevalent cohort study.

Methods
- Sample:10,743 inpatients, 25 Scottish hospitals
- Measures: Hospital Records / Census Data

Results
- 33% patients died within 1 year of admission
- +45.6% for those over 85 years of age

PALLIATIVE MEDICINE

Original Article

Imminence of death among hospital inpatients: Prevalent cohort study

David Clark[1], Matthew Armstrong[2], Ananda Allan[1], Fiona Graham[4], Andrew Carnon[3] and Christopher Isles[5]
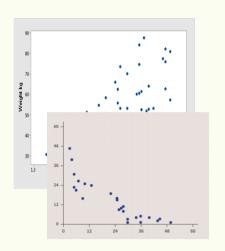
Abstract
Background: There is a dearth of evidence on the proportion of the hospital population at any one time, that is in the last year of life, and therefore on how hospital policies and services can be oriented to their needs.
Aim: To establish the likelihood of death within 12 months of a cohort of hospital inpatients on a given census date.
Design: Prevalent cohort study.
Participants: In total, 10,743 inpatients in 25 Scottish teaching and general hospitals on 31 March 2010.
Results: In all, 3098 (28.8%) patients died during follow-up: 2.9% by 7 days, 8.9% by 30 days, 16.0% by 3 months, 21.2% by 6 months, 25.5% by 9 months and 28.8% by 12 months. Deaths during the index admission accounted for 32.3% of all deaths during the follow-up year. Mortality rose steeply with age and was three times higher at 1 year for patients aged 85 years and over compared to those who were under 60 years (45.6% vs 13.1%; p < 0.001). In multivariate analyses, men were more likely to die than women (odds ratio: 1.18, 95% confidence interval: 0.95–1.47) as were older patients (odds ratio: 4.99, 95% confidence interval: 3.94–6.33 for those who were 85 years and over compared to those who were under 60 years), deprived patients (odds ratio: 1.17, 95% confidence interval: 1.01–1.35 for most deprived compared to least deprived quintile) and those admitted to a medical specialty (odds ratio: 3.13, 95% confidence interval: 2.48–4.00 compared to surgical patients).
Conclusion: Large numbers of hospital inpatients have entered the last year of their lives. Such data could assist in advocacy for these patients and should influence end-of-life care strategies in hospital.

Correlational Research

- Relationship between two or more variables
  - Strength of relationship
  - Determines the type of relationship

- Variables are measured/observed
  - No manipulation
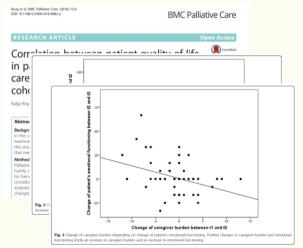 - Illustrates data distributions

- Does not determine cause and effect

Aim

- to identify correlations between changing patient QoL and changing burden of family caregivers

Design

- Cohort Study (Correlation)

Methods

- QoL Questionnaire / Burden (carers)
- 100 patients & caregivers

Results

- Patient have low QoL – but increased closer to death
- Caregiver burden did not deteriorate over time
  - was influenced by mood and dyspnoea

Quasi-Experimental / Causal Comparative Research

- Will examine causality and effects within relationships between variables

- Less control than true experimental designs
    - No randomization to groups within sample
        - Existing groupings
        - Convenience
    - No true control

- Good internal and external validity

Aim

- To assess the impact of a rapid response hospice at home service (intervention) on people dying in their preferred place

Design

- Quasi-experimental multi-centred controlled evaluation.
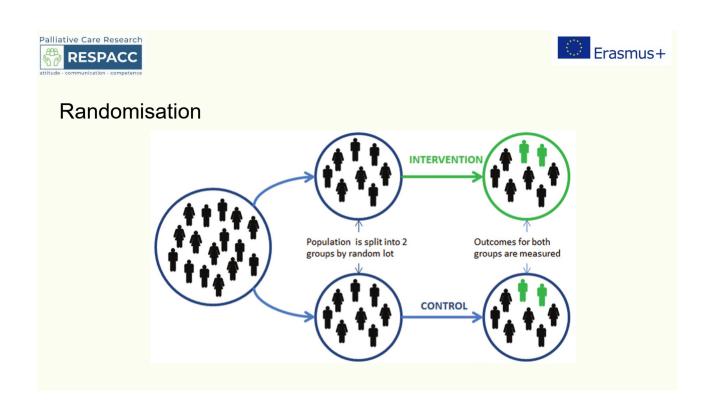
Participants: Community served by one hospice - 953 patients; 64 carers.
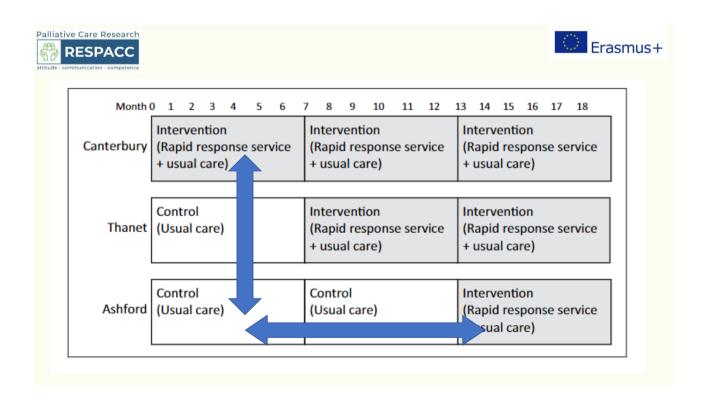
Results

- No significant difference between control and intervention groups in proportions achieving preferred place of death (61.9% vs 63.0% (odds ratio: 0.949; 95% confidence interval: 0.788-1.142)).

Original Article

A quasi-experimental controlled evaluation of the impact of a hospice rapid response community service for end-of-life care on achievement of preferred place of death

Laura M Holdsworth[1], Heather Gage[2], Simon Coulton[1], Annette King[1] and Claire Butler[3]

Abstract

Background: Rapid response services operating 24h a day have been advocated in UK health policy to support dying patients at home, though there is limited evidence of their effectiveness.
Aim: To assess the impact of a rapid response hospice at home service (intervention) on people dying in their preferred place, and carer quality of life, compared to usual care (control).
Design: Quasi-experimental multi-centred controlled evaluation. Patient data were collected from hospice records; carers completed postal questionnaires to report quality of life, anxiety and depression.
Setting and participants: Community served by one hospice (three contiguous sites) in South East England; 953 patients who died with a preferred place of death recorded and 64 carers who completed questionnaires.
Results: There was no significant difference between control and intervention groups in proportions achieving preferred place of death (61.9% vs 63.0% (odds ratio: 0.949; 95% confidence interval: 0.788–1.142)). People living at home alone were less likely to die where they wanted (0.541; 95% confidence interval: 0.438–0.667). Carers in the intervention group reported worse mental health component summary scores (short form-12, p=0.03) than those in the control group; there were no differences in other carer outcomes.

Randomisation

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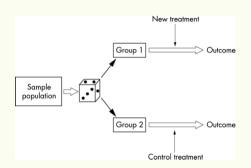attitude - communication - competence

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Experimental Research

- Used to examine causal relationships
- Manipulation of at least one independent variable
- Uses experimental and control groups
- Random assignment to control all other variables
- Highly controlled, objective, systematic

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Aim
- Effect of introducing palliative care early (post diagnosis)

Design
- Randomised Controlled Trial
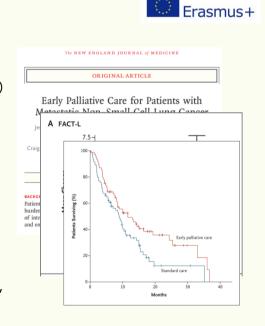
Methods
- Questionnaire (FACT-L, HADS)
- DoD

Results
- Exp Patients had better quality
- median survival was longer 11.6 months vs. 8.9 months, P=0.02).

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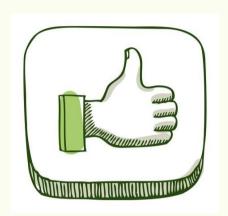
Advantages

- Test theory and hypothesis robustly

- Validity
  - Objectivity
  - Ability to control external factors
  - Results gained can be seen as representative and unbiased.

- Specific answers to improve practice
  - Useful for testing the results from descriptive and correlational studies

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Disadvantages

- Difficult and expensive
  - require a lot of time to perform.

- Careful planning –
  - randomisation / control groups / bias / blinding.

- Can bee seen as shallow

- Specialised statistical analysis
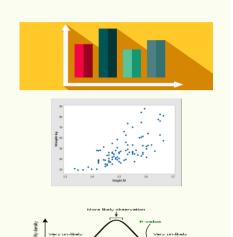
Summary

- Descriptive
  - Illustrative
  - Does not formally test hypothesis
- Correlational
  - Relationship between variables
  - Does not imply causation
- Quasi Experimental
  - Test treatment/difference in groups
  - Not all variables controlled
- Experimental
  - Specificity - using control groups and randomisation
  - Causality

THANK YOU