

Session Objectives

- Understand the need for research
- Classification of research
- Getting acquainted with steps involved in conduct of a research

WHY DO RESEARCH ?

- Excitement of making new discoveries
- Pursuit of prestige
- Driven by passion
- In search of recognition
- Publish and succeed

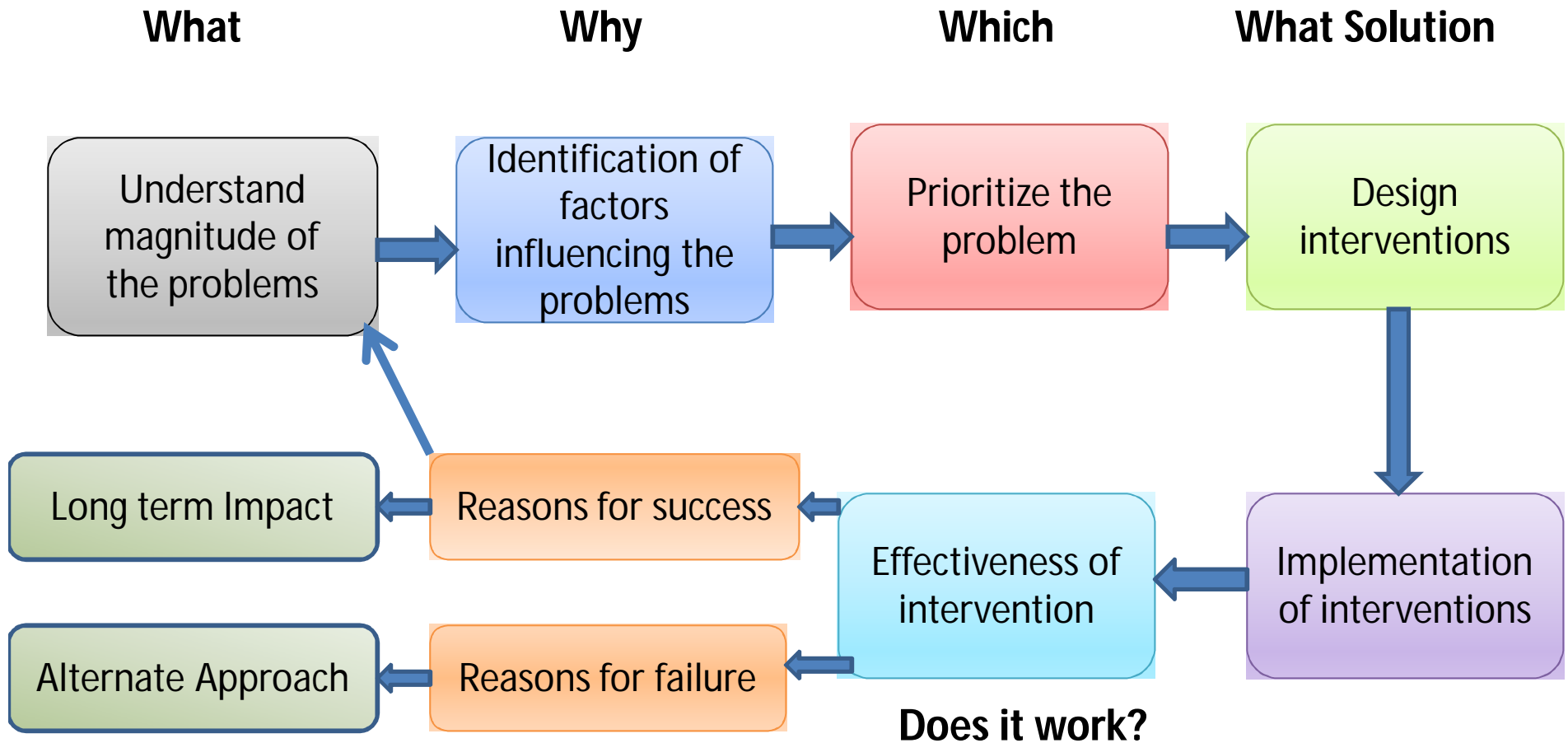
BENEFITS FROM RESEARCH

- Develops a critical attitude
- Chance to study subject in depth
- Learns to use the library and online sources
- Acquires special skills and interests
- Leads to higher degree
- Increase the opportunity for further funding of projects

What is research?

- *The systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions.*
- *Systematic investigative process employed to increase or revise current knowledge by discovering new facts.*
- *Investigate systematically*

Research Matrix



Classification of Research

1. Basic Research

2. Applied research

- Clinical research
- Programme research
- Policy research

Steps involved in conduct of research

Select an area of interest: Select a topic

Collect and evaluate existing information

Research question: Set aim and objectives

Set a relevant study design

Define your study subjects

Develop the tool for data collection

Collect the data

Data analysis and interpretation

Presentation of data

Discuss your results

Write the report

Dissemination as publication

*THIS IS THE
BEGINNING*

Select an area of interest: Select a topic

Collect and evaluate existing information

Research question: Set aim and objectives

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Define your study subjects

Develop the tool for data collection

Collect the data

Data analysis

Write the report

Dissemination as publication

Selection of Topic

- Leads
 - Practice
 - Conversations
 - Reading the books
 - Literature review
 - Media – News Papers
 - Funding agencies
 - Conferences/Workshops
 - Intuition
 - **My BOSS ASSIGNS..... !!!!!**

Aim

- Ultimate desired state towards which the objectives are directed.
- Broad statements of desired outcomes, or the general intentions of the research
- Emphasize on what is to be accomplished (**NOT HOW IT IS TO BE ACCOMPLISHED**)

Eg: Implementation and evaluation of a self sustaining educational intervention on knowledge regarding NCDs in North Karnataka

1. Frame the question: write out your information need in the form of a question, for example:

Does hand washing among healthcare workers reduce hospital acquired infections?

The question above includes the **PICO** elements:

	<i>Example:</i>
P (Problem or Patient or Population)	hospital acquired infection
I (intervention/indicator)	hand washing
C (comparison)	no hand washing; other solution; masks
O (outcome of interest)	reduced infection

Research question

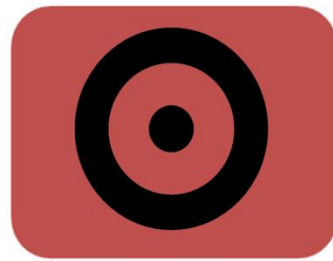
FINER

- **F**easible
- **I**nteresting
- **N**ovel
- **E**thical
- **R**elevant

Objectives

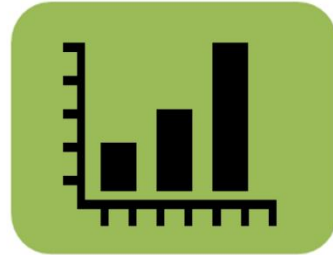
- Ways/modes to fulfill the aim
- Are the steps you are going to take to answer your research questions
- Specific list of tasks needed to accomplish the aim of the project

The aim is what you want to achieve, and the objective describes how you are going to achieve that aim.



Specific

S



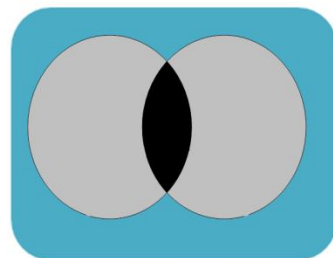
Measureable

M



Attainable

A



Relevant

R



Time Based

T



Objectives do's and don'ts

- Use **measurable terms** to describe the actions of the learner. Not the words like understand, know, be familiar with, comprehend, learn, or appreciate
- Use the terms like – to describe, to assess, to estimate etc.
- Describe **only one action** in each objective. Don't combine more than one action using "and."

Aim:

Implementation and evaluation of a self sustaining educational intervention on knowledge regarding NCDs in a rural community

Objectives:

1. To compare the knowledge regarding NCDs before and after educational intervention among link workers
2. To assess the knowledge regarding NCDs before and after educational intervention among general population
3. To assess the reporting pattern and adherence to drugs among hypertensives and diabetics

Aim: To study safety and immunogenicity of Rabipur and Verorab for post exposure prophylaxis among animal bite victims

Objectives:

1. To assess the frequency of Adverse Drug Reactions for Rabipur and Verorab administered intradermally among animal bite victims
2. To assess the immunogenicity of Rabipur and Verorab by estimating rabies virus neutralizing antibody (RvNab) using RFFIT method.

A STUDY OF PROSEAL LARYNGEAL MASK AIRWAY IN UROLOGICAL LAPAROSCOPIC SURGERIES IN LATERAL POSITION

Aims and Objectives:-

1. To study the ease of insertion of device.
2. To study the number of attempts required for insertion.
3. To study the time taken for proper placement of Proseal LMA.
4. To study airway sealing pressures.
5. To study the chances of displacement of device
6. To look for evidence of regurgitation.
7. To study the evidence of trauma to airway.
8. To study the incidence of sore throat post-operatively
9. To grade the view of glottis aperture through fiberoptic bronchoscope.

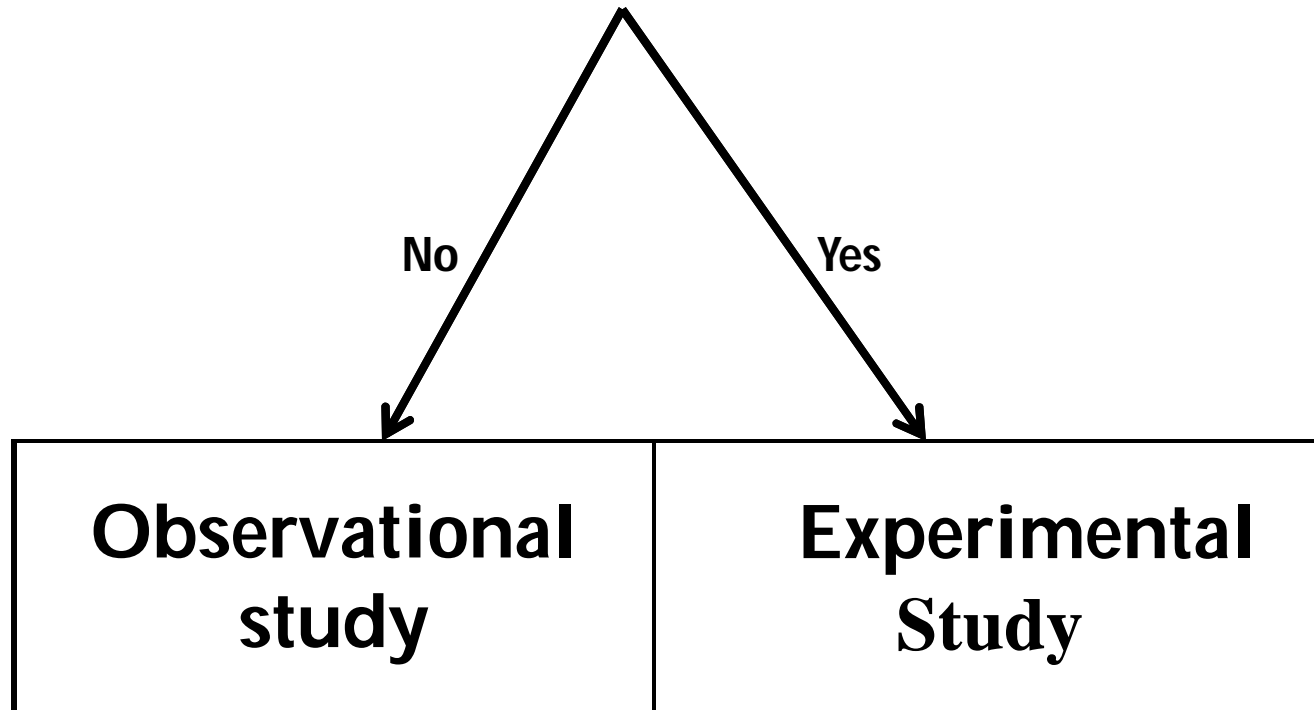
Study designs.



Dr. Praveen K

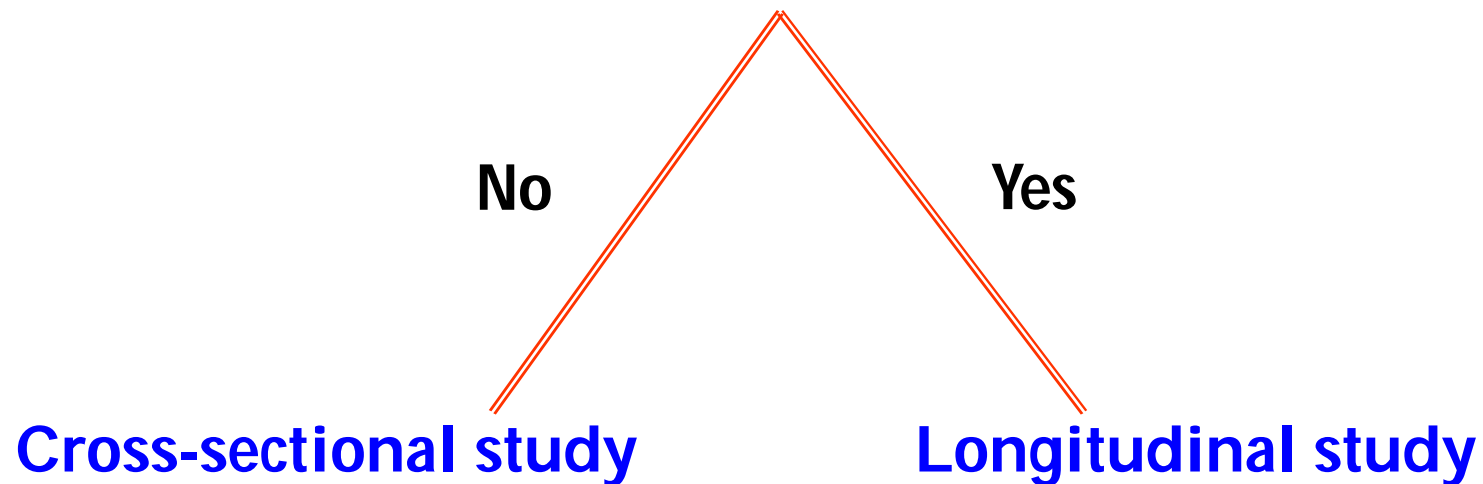
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Decision No.1
Alter the events under study



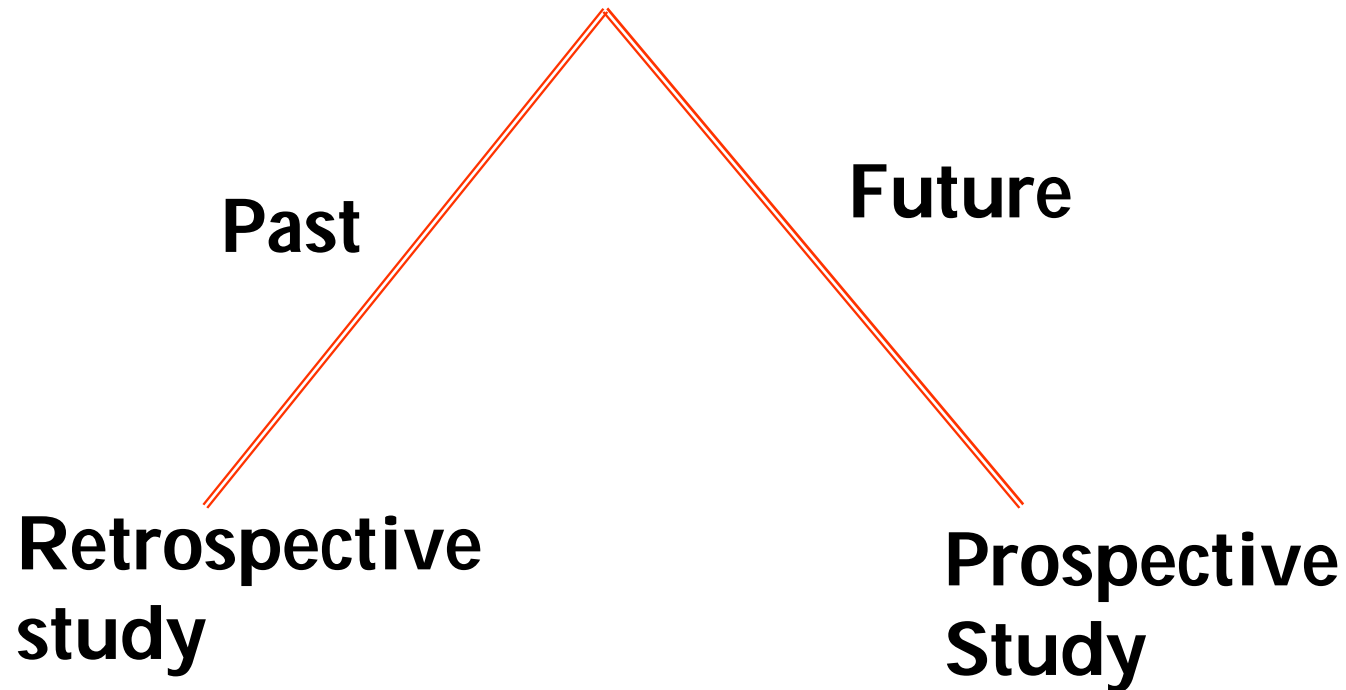
Decision No. 2

Make measurements on more than
one occasion



Decision No. 3

Deal exclusively with past or with future



What you want to do

to generate the hypothesis

to test the hypothesis

to Develop / accept a new Rx

Study designs



```
graph TD; A[Study designs] --> B[Observational]; A --> C[Experimental]; B --> D[Descriptive]; B --> E[Analytical]; D --> D1[Case report]; D --> D2[Case series]; D --> D3[Cross sectional]; D --> D4[Longitudinal]; E --> E1[Case control]; E --> E2[Cohort]; C --> F[RCT]; C --> G[Non Randomized];
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The diagram is a hierarchical flowchart titled 'Study designs'. It starts with a red box at the top, which branches into two pink boxes: 'Observational' and 'Experimental'. The 'Observational' box further branches into two purple boxes: 'Descriptive' and 'Analytical'. The 'Descriptive' box leads to a vertical stack of four dark blue boxes: 'Case report', 'Case series', 'Cross sectional', and 'Longitudinal'. The 'Analytical' box leads to a vertical stack of two blue boxes: 'Case control' and 'Cohort'. The 'Experimental' box leads to a vertical stack of two green boxes: 'RCT' and 'Non Randomized'. All boxes have a 3D effect with a shadow.

Observational

Experimental

Descriptive

Analytical

Case report

Case series

Cross sectional

Longitudinal

Case control

Cohort

RCT

**Non
Randomized**

Descriptive studies

Case Reports/ Case Series

- The most basic type of descriptive study.
- Link between clinical medicine and epidemiology
- Hypothesis generating.
- Rarely the evidence can even be strong!!

Malformed limbs in Thalidomide tragedy

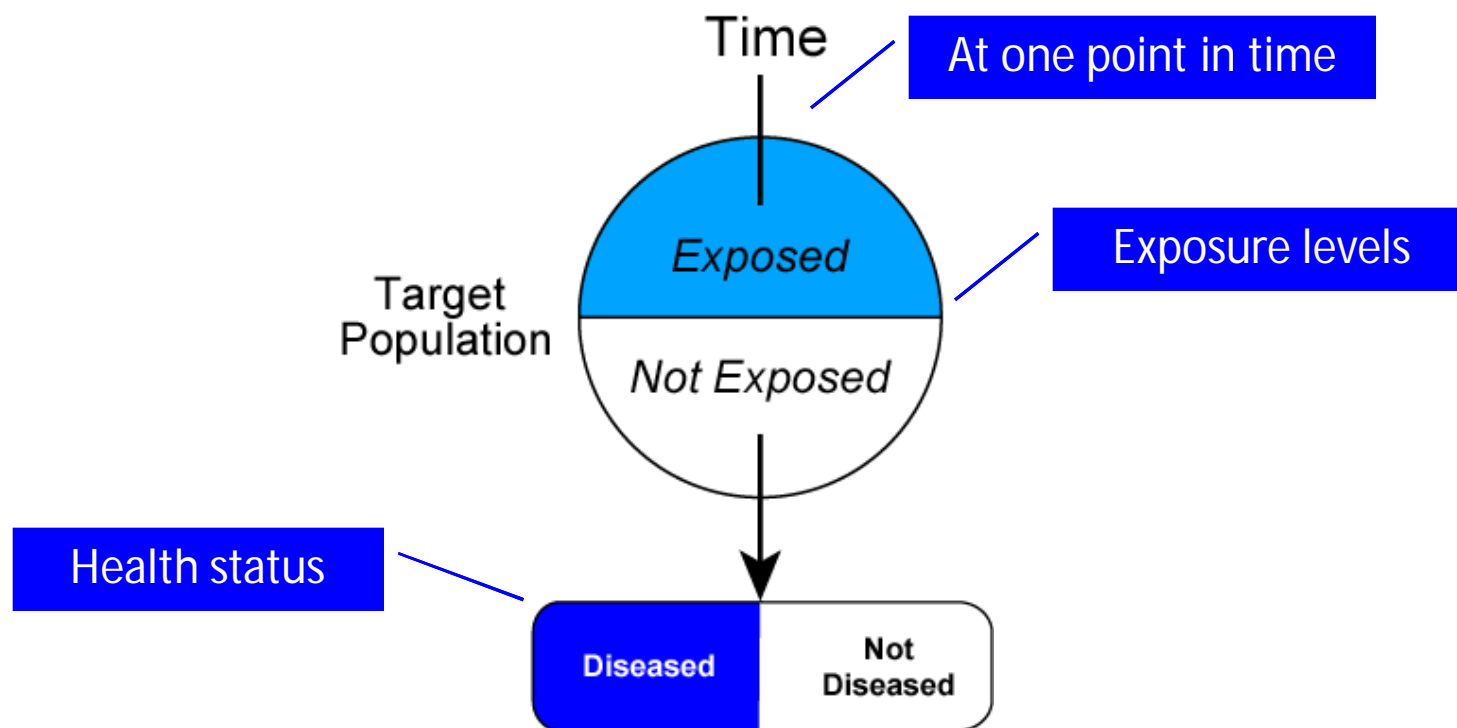


Descriptive study

- Define the population
- Define the disease
- Describe the disease
 - Time
 - Place
 - person
- Measure the disease
- Compare with known indices
- Formulate the hypothesis

- Descriptive studies can be
 - Cross-sectional study
 - Longitudinal study

Cross Sectional studies



Example for cross sectional study

Original Article

PROFILE OF ANIMAL BITE CASES ATTENDING URBAN HEALTH CENTRES IN SURAT CITY: A CROSS-SECTIONAL STUDY

Pradeep Umarigar¹, Gaurang Parmar², Prakash B Patel ³, R K Bansal⁴

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Conflict of interest: Non declared

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Date of Submission: 5-10-12

ABSTRACT

Context: Exposure to dog bites is an important public health problem, these bites not only cause increase morbidity and mortality but also loss of work days and cost for treatment. Moreover, myths and practices amongst people prevent appropriate post exposure treatment.

Objectives: The survey was conducted with objectives to study the epidemiological characteristics of victims of animal bite injuries and health seeking behaviour of persons with animal bite.

Methodology: It was a cross-sectional study conducted among new cases of animal bites registered at Urban Health Centres of Surat city.

Results: Out of total 337 cases of animal bites majority (48%) belongs to 15-45 years of age-group and 79 % were male. Ninety four percent of cases were bitten by stray dog. Children less than 15 years of age were more likely to provoke a bite ($P < 0.05$). Category II bites were seen in 198(59 %) of cases. In 89.8% cases lower extremities were affected. Only two hundred forty cases had attended the ARV clinic within 24 hours of bite. Only 65 % of cases had done the wound washing.

Conclusion: Local treatment of the wound soon after a bite is an important step in the management of a case and this was lacking in most of the subjects. Efforts to eliminate the stray dogs are required.

A Study of Clinical Profile of Dengue Fever in Kollam, Kerala, India¹

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****Kerala Institute of Medical Sciences, Thiruvananthapuram, Kerala, India*

Abstract

A large urban epidemic of dengue fever occurred in Kollam city of Kerala in 2003. During this epidemic, a study was conducted among 250 IgM dengue antibody-confirmed cases admitted to three major hospitals in Kollam city. The presenting symptoms were: fever (96.8%), headache (77.2%), abdominal pain (62.4%), diarrhoea (15.2%), bleeding (15.2%), skin rash (13.2%), pruritus (10.4%), sore throat (5.2%), and seizures (0.8%). The major physical findings noted included positive tourniquet test (33.67%), hepatomegaly (17.6%), bradycardia (16.8%), pleural effusion (13.2%) and ascites (12%). The most frequent abnormal laboratory findings included haemoconcentration (27.8%) and severe thrombocytopenia (<10 000 in 8.5%). Eight out of 250 patients died (case-fatality rate (CFR) = 3.2%). In all the 8 cases of death, disseminated intravascular coagulation (DIC) was the cause of death. DIC was associated with thrombocytopenia (platelet count-50 000/cmm) and haemoconcentration (7 out of 8 cases).

Keywords: DF/DHF, clinical profile, Kollam, Kerala.

Example for Longitudinal studies

METHODS

Subjects

Sixteen healthy, spontaneously pregnant women were recruited from the public health service. All subjects were nonsmokers and were not allowed to drink coffee or tea on the experimental day. No exercise or eating was permitted for at least 2 h before the start of each experiment. None of the subjects had any symptoms of cardiovascular disorders, and none used any medication. A urine dip-stick test was always used before the experiments to check for any symptoms of proteinuria or glucosuria. Informed consent was obtained from all subjects, and the experimental protocol was approved by the regional ethics committee. The subjects were scheduled for experiments five times during pregnancy (weeks 8, 15, 22, 29, and 36) and then again 12 wk after delivery. All subjects were given a vaginal ultrasound scan at 8 wk gestation to ensure a singleton pregnancy and confirm gestational length. At 36 wk, a repeat ultrasound scan was made to check that the fetus was growing normally and that blood flow velocity waveforms in the maternal uterine arteries and fetal umbilical artery were normal.

Instrumental Setup and Protocols

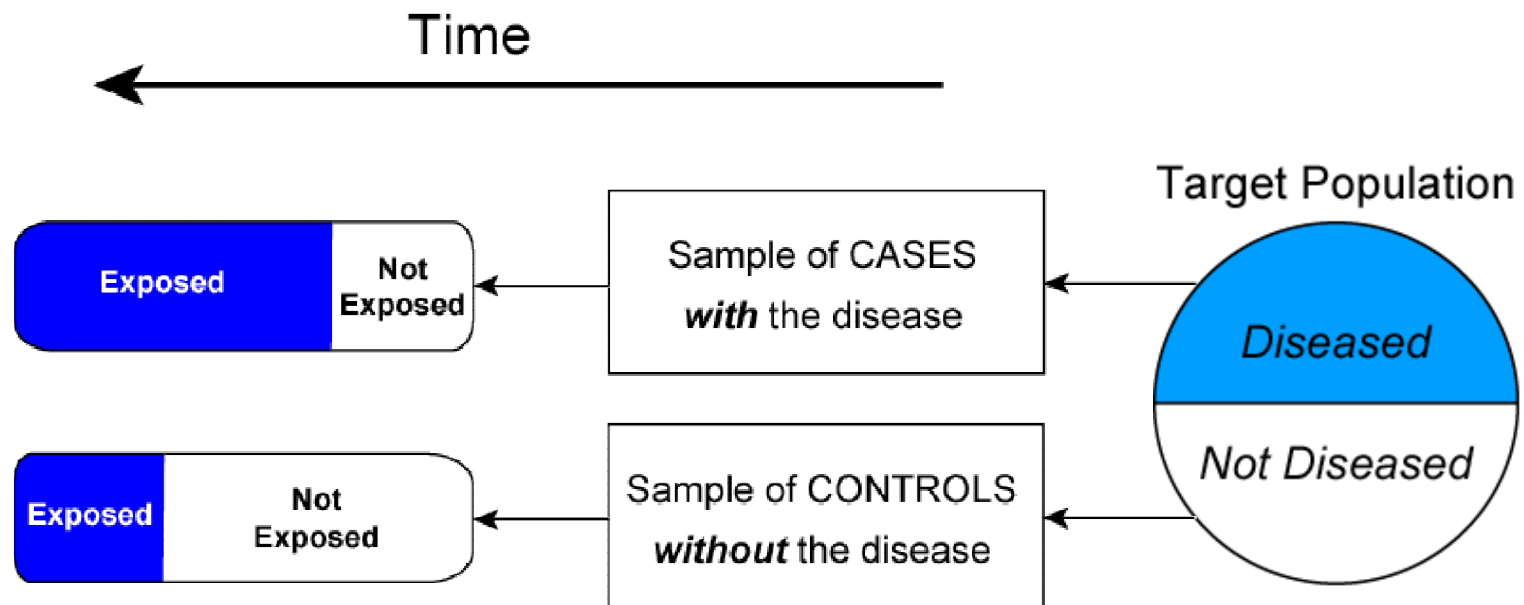
Analytical study

- Aim of Analytical Studies is to find out
 1. Whether or not any association exists between cause and effect.
 2. If exists what is the strength of the association.

ANALYTICAL STUDIES

- There are two types of studies
 - a. Case control study
 - b. Cohort study

Case-control study design



Example of case control study

OPEN ACCESS Freely available online

PLOS ONE

Comparative Assessment of Cytokines and Other Inflammatory Markers for the Early Diagnosis of Neonatal Sepsis—A Case Control Study

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Abstract

Objective: Cytokines (IL-6, IL-8 and TNF- α), sCD163, and C-reactive protein were serially measured in an attempt to identify a set of tests which can reliably confirm or refute the diagnosis of neonatal sepsis at an early stage.

Methods: One hundred neonates suspected to have sepsis on clinical grounds and who met the inclusion criteria were enrolled for the study. Based on the positive or negative blood culture reports they were classified as infected (n = 50) and non-infected (n = 50) neonates respectively. Fifty healthy neonates without any signs of sepsis were also included in the study as control group. The initial blood sample was taken on day 0 (at the time of sepsis evaluation) and two further samples were taken on days 1 and 2 for monitoring the clinical progress and response to treatment. In the control group the cord blood and 48 hours venous sample was collected. Plasma CRP (ng/ml), IL-6 (pg/ml), IL-8 (pg/ml), TNF- α (ng/ml) and sCD163 (ng/ml) were determined by double antibody method Enzyme Linked Immunosorbent Assay in all the three blood samples.

Results: The cut of levels for CRP at >19,689 ng/ml had a sensitivity of 68%, specificity of 92%, for IL-6 at >95.32 pg/ml had a sensitivity of 54%, specificity of 96%, for IL-8 at >70.86 pg/ml had a sensitivity of 78%, specificity of 70%, for sCD163 at >896.78 ng/ml had a sensitivity of 100%, specificity of 88% for the diagnosis of infection before antibiotics. TNF- α levels of >12.6 ng/ml showed 100% sensitivity and 72% specificity for the diagnosis of inflammation.

Conclusion: The most powerful predictor to differentiate between the non-infected and infected neonates before antibiotics was sCD163. The most powerful indicator for evaluation of prognosis is IL-6. sCD163 can be used alone to screen for sepsis in neonates before the results of blood culture are received.

Citation: Prashant A, Vishwanath P, Kulkarni P, Sathya Narayana P, Gowdara V, et al. (2013) Comparative Assessment of Cytokines and Other Inflammatory Markers for the Early Diagnosis of Neonatal Sepsis—A Case Control Study. PLoS ONE 8(7): e68426. doi:10.1371/journal.pone.0068426

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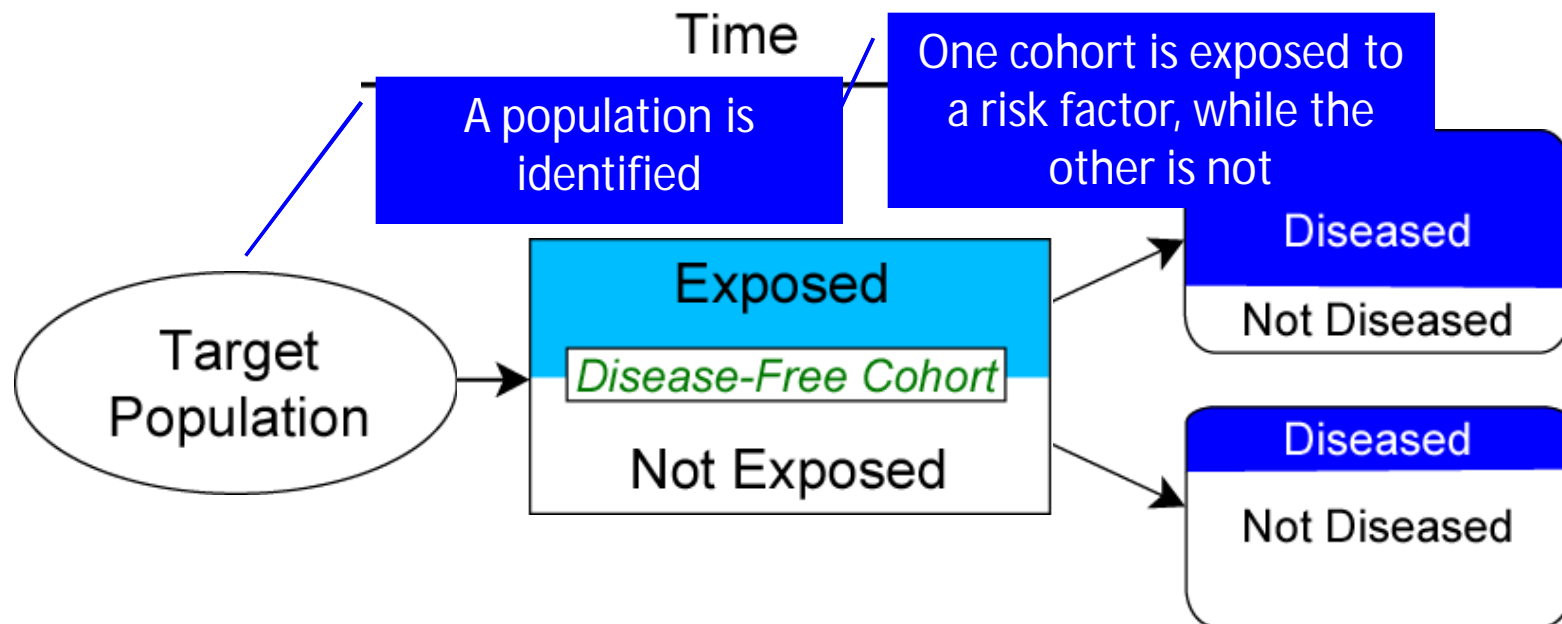
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Competing Interests: The authors have declared that no competing interests exist.

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Cohort study



Example of cohort study

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© 2009 Cancer Research UK All rights reserved 0007–0920/09 \$32.00
www.bjcancer.com



Short Communication

A cohort study of the risk of cancer associated with type 2 diabetes

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BACKGROUND: There is evidence to suggest that diabetes may increase the risk of incidence and mortality from cancer.

METHODS: In a cohort study using record-linkage health-care datasets for Tayside, Scotland in 1993–2004, we followed up 9577 newly diagnosed patients with type 2 diabetes, and two matched non-diabetic comparators, in the national cancer register.

RESULTS AND CONCLUSIONS: The risk ratio for any cancer, adjusted for deprivation, was 0.99 (95%CI 0.90–1.09). Significantly increased risks were observed for pancreatic, liver and colon cancer.

British Journal of Cancer (2009) 101, 1199–1201. doi:10.1038/sj.bjc.6605240 www.bjcancer.com

Published online 18 August 2009

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Keywords: type 2 diabetes; cohort study; survival analysis; epidemiology

Whether there was an increased prevalence of cancer associated with insulin use was questioned in the early twentieth century (Marble, 1934), and there is a growing body of evidence suggesting that diabetes increases the risk of the incidence and mortality from certain cancers. These include pancreatic and liver cancer, colorectal cancer, breast cancer, bladder cancer, cancer of the kidney and endometrial cancer (Wideroff *et al*, 1997; Coughlin *et al*, 2004; Rousseau *et al*, 2006; Kuriki *et al*, 2007). However, the results of studies of diabetes and cancer have been very mixed with many not distinguishing between type 1 and type 2 diabetes (Wideroff *et al*, 1997), or have defined groups according to treatment (Swerdlow *et al*, 2005). In some studies, the basis for diabetes diagnosis is self-report (Coughlin *et al*, 2004), in others it is clinical (Saydah *et al*, 2003). Studies have been both retrospective (Kuriki *et al*, 2007) and prospective, with some prospective studies following up from diagnosis of diabetes (Ragozzino *et al*, 1982); another followed up a cross-sectional sample of patients (Swerdlow *et al*, 2005). In this study, we present the risks of different cancers following diagnosis of type 2 diabetes in Tayside, Scotland, using a standardised methodology.

information system was used to identify all patients registered with any Tayside GP practice who were diagnosed with type 2 diabetes in 1993–2004 (Morris *et al*, 1997). Their date of diagnosis was defined as their study index date. Any patient who had an earlier record of cancer diagnosis on the Scottish national cancer registry (SMR6) was excluded (Scottish Cancer Registry, 2009).

For each eligible patient with type 2 diabetes, two non-diabetic comparators were selected at random from computerised lists of patients registered with primary care, matched for age (within 1 year), sex and GP practice. The index date of the comparator was that of its matched diabetic patient; and the comparator had to be alive and have no earlier cancer diagnosis on this date.

Diabetic patients and their comparators were followed for a maximum of 11 years in a survival analysis to the study end date (1st January 2004). The primary outcome was diagnosis of malignant cancer on SMR6; deaths were also identified. The relationship between type 2 diabetes and cancer was assessed in a Cox regression unadjusted, and then in a multivariable model adjusted for deprivation (measured using deciles of a postcode score for material deprivation) (Carstairs, 1990). This was repeated for specific cancer types according to the ICD10 diagnosis code recorded on SMR6.

THANK YOU !

The logo for Community Medicine features a large, stylized smiley face. The upper curve of the smile is a thick red line, and the lower curve is a thick dark blue line. The words "Community Medicine" are centered within the smile. "Community" is in a dark blue, sans-serif font, and "Medicine" is in a red, serif font.

Community Medicine

Working towards positive health

