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Review Article

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Research methodology clinical prosthodontic perspective– A review article

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Abstract

Process writing a review in systematic manner, by framing an Aim and Objective, having an inclusion criteria and exclusion criteria. Literature search is done both in the electronic and manually. Total number of journal which focus on the our aim is selected, the results and methodology is systematically evaluated META analysis is done and separate statistics is applied. Conclusion is given based on the various findings. Systematic review is the evidence based dentistry.

Keywords: Cohort study, Hybrid study, Randomized case caontol study (RCT).

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INTRODUCTION

Research means re doing the search. The quest of search is the key factor in not only for the prosthetics, it holds good for the life. The key factor in the research is performing basic aspects like literature review, framing research question and hypothesis in a systematic manner. The most important thing is systematically planning the methodology. Research in prosthetics is having two magnitudes, one focus is on the material science and other area is clinical oriented problems. This article discuss about the research methodology for a clinical set up.

Types of study:

Any Research will broadly comes under the following groups 1. Observational study 2. Experimental study 3. Qualittative study 4. Systematic review [1]. This article will discuss how this research are practically applied to the field of Prsothodontics by taking a various problem. The above discussed studies are applied to the various field of prosthodontics and discussed in systematic manner.

Descriptive study:

This type of study is not systematically planned design, it aims at Describing the problem, Who are all affected ? How it is handled ?. A case report and case series will come under this category. A case report on tooth supported over denture will discuss about the method of fabrication and how the patient is benefitted, case report will generally discuss only one case. A case series on tooth supported over denture will discuss about more than one case may three or five. A descriptive study will lead lot research question and various hypothesis , let us discuss how this descriptive study will take us to the next level of research.

CROSS SECTIONAL STUDY (prevalence study)

A cross sectional study is an observational study in which exposure and disease are determined at the same point in time in a given population. Cross-sectional studies provide a snapshot picture of a community at a point in time, and do not involve following a group of individuals over time [2]. This study will infer what is happening?. No waiting period thus making fast inexpensive.

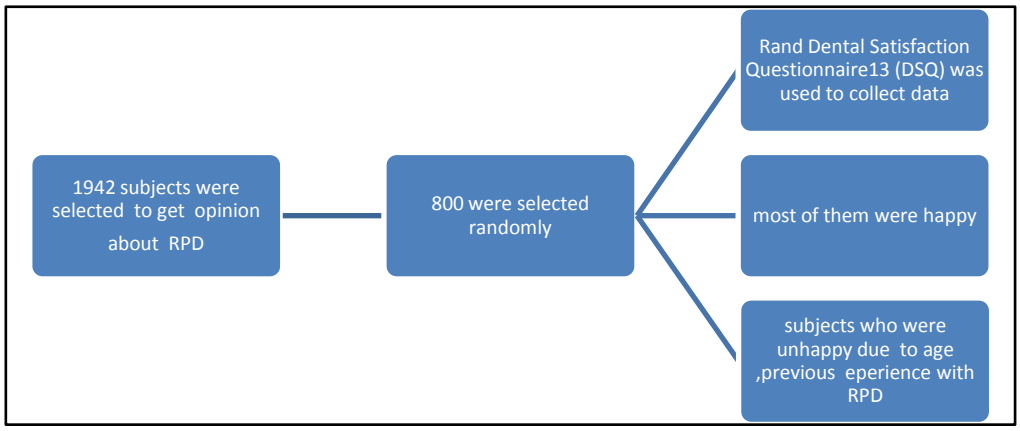

Figure 1: Study design for cross sectional study on satisfaction on RPD

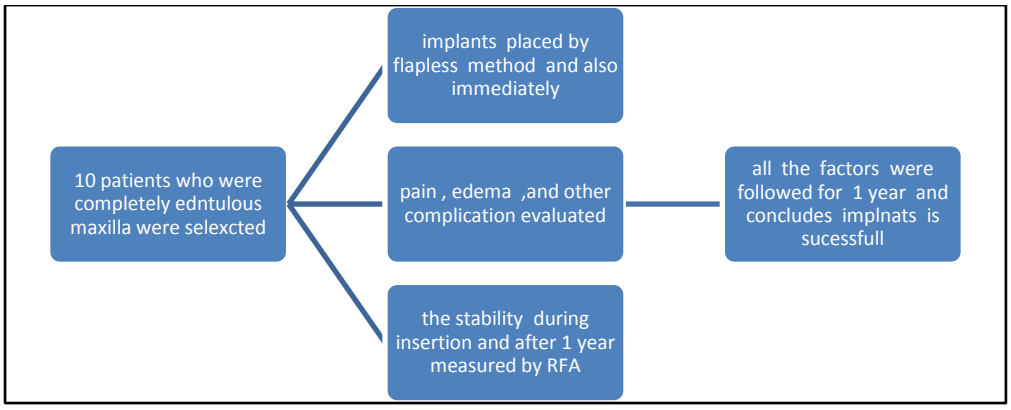

Figure 2: Study design for cross sectional study on satisfaction on RPD

A cross sectional study on Treatment outcomes with mandibular removable partial denture [3], is discussed here which is of interest to a prosthdontist. Aim of the study is to find the treatment outcome with mandibular removable partial denture provided dentist in private practice in the Washington state. The methodology of the study is shown in Fig 1. The study concludes most of the subjects were happy but very few were un happy. This study gives idea about how Removable partial denture is satisfactory option and why some are not satisfied. This study will help to find out the problem and how it can be managed.

COHORT STUDY

A cohort study involves observing and monitoring a group of individuals over a period of time. A study on immediate functional loading of implants with flapless surgery in edentulous maxilla patients is discussed here to verify the process of Cohort study [4]. The group of people who are completely edentulous maxilla are the cohort, the common thing among them is they do not have teeth in the maxilla, ten patients were selected and 202 implants were placed. Implants were placed by flapless procedure and loaded immediately. Outcome measures were prosthesis and implant success, biologic and prosthetic complications, pain, and edema evaluation. Stability of individual implants was assessed both manually and with Osstell at baseline and after 12 months of loading. The study concludes, Implants placed in the edentulous maxilla with a flapless procedure can be successfully loaded the same day of surgery. The methodology is shown in the following fig 2.

CASE CONTROL STUDY

Case control study sometimes called a case-referent, retrospective or *trohoc* (cohort spelt backwards). This study mainly focus on the epidemiologic problems , it is application in the field of prosthdontics is limited. To start a case control study case (people with disease) and control (people without disease) are necessary. The methodology of a case control study is shown in Fig 3. Case control study reported in the prosthdontic literature are mainly Hybrid studies.

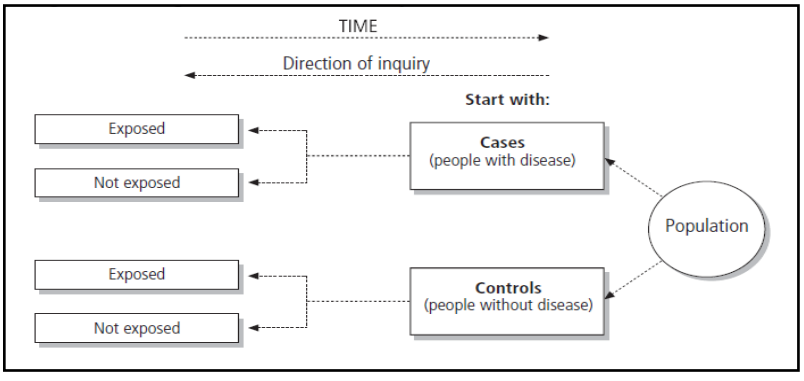

Figure 3: Study design for cross sectional study on satisfaction on RPD

HYBRID STUDY

Nested case control and Nested case cohort study are two type of hybrid study. The term Nested case control study means, the study is a actually a cohort study, data from the study is used to conduct a case control study vice versa for the Nested case cohort study. A case control study on improvement in quality of life after placing implants in healed alveolar ridges or extraction socket is discussed here [5]. The study is actually a cohort study, the methodology of the study and how it a case control study is conducted is shown the Fig 4. The study is placing implants in a partially edentulous area (anterior region). Oral Health Impact Profile questionnaire (OHIP-14) was used to collect the data before placing the implant served as baseline data (Control) and OHIP 14 was used to collect the data after 1,6,12 months (case). The base line data is compared with the data obtained after 1,6,12 month and the results are interpreted.

RANDOMIZED CASE CAONTOL STUDY (RCT)

This is experimental study design most frequently applied in the prosthodntic research. This study will have a control group and study group, an interventional factor can be new technique, new drug, new material etc which will tested on the study group. The effect of the intervention compared with the study group and the results are concluded. Study design of RCT is shown in the Fig 5. There are two type of study parallel design and cross over design

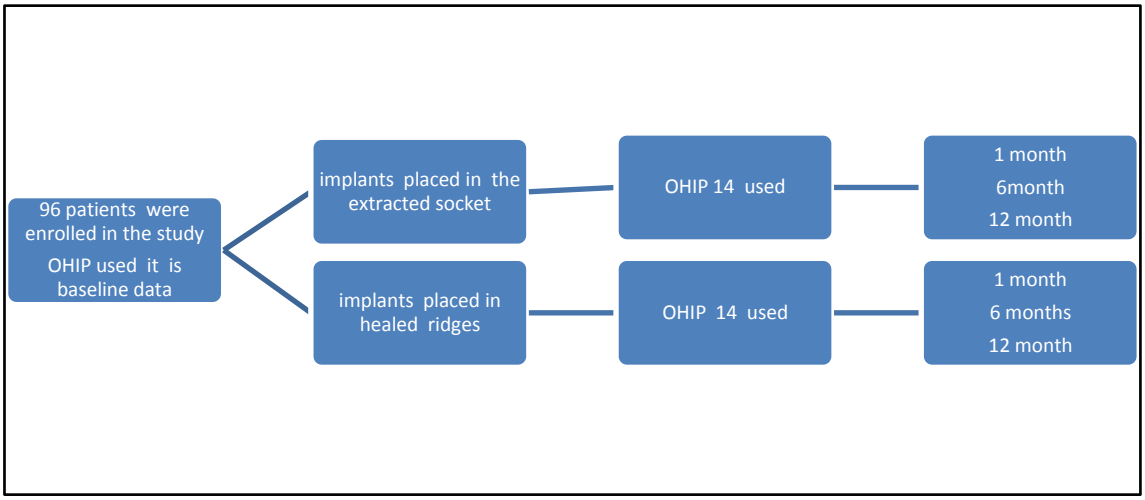

Figure 4: Design of Nested case control study (patients placed implant and followed for 1,6,12 month it is a cohort study) OHIP 14 data before placing the implant and after placing the compared it becomes a case control study

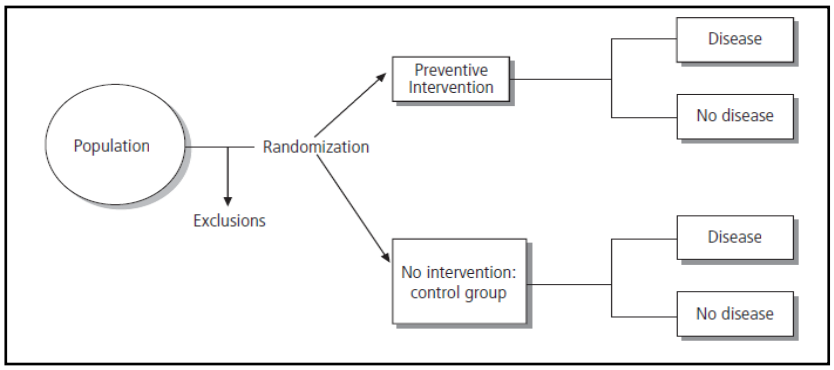

Figure 5: Design for Experimental study

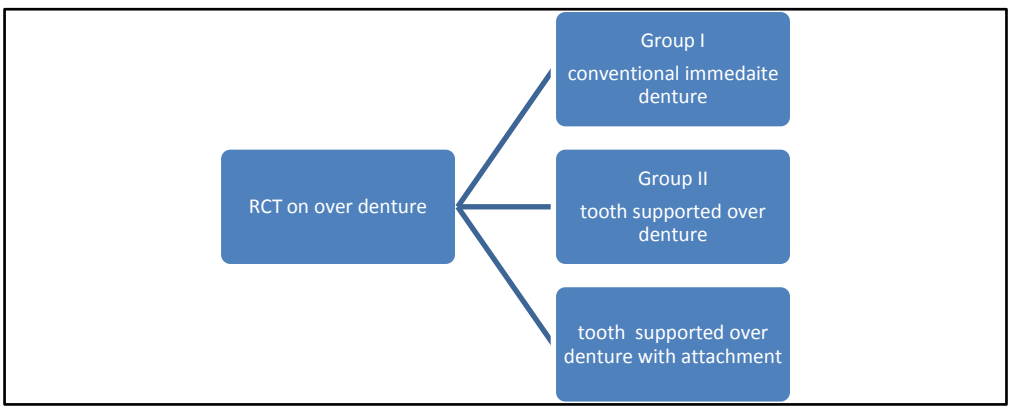

Figure 6: Study design showing parallel Design

Parallel group RCT Design

A Randomized case control study on patient satisfaction on over denture is discussed here [6], 75 patient were selected and divided in to three group. Group I is immediate denture group (ID), Second group is tooth supported over denture on canine (IOD), Third group is magnetic attachment retained over denture (IODA). All patients were evaluated clinically and by questionnaires over a one year period after denture insertion [6]. All the groups run parallel and the intervention factor is the magnetic attachment. The study design is shown in the Fig 6.

Cross over RCT design

A study on mandibular advancement splint (MRSA) and tongue stabilizing device (TSD) in obstructive sleep apnea (OSA) is discussed here to know about the methodology of cross over RCT [7]. The aim of the study is to find which type of splint therapy is better in controlling the OSA. The study design is shown in Fig 7. Acclimatization period and wash out period are two terms should be used. Acclimatization period is one in which the patient is instructed to use the two type of splint randomly for 8 weeks (4 weeks for each splint). Two type of splint are inserted randomly with one week washout period, it is necessary to prevent the carryover effect of the first treatment persisting into the time period of the second treatment. The improvement in the symptom is assessed by polysomnography.

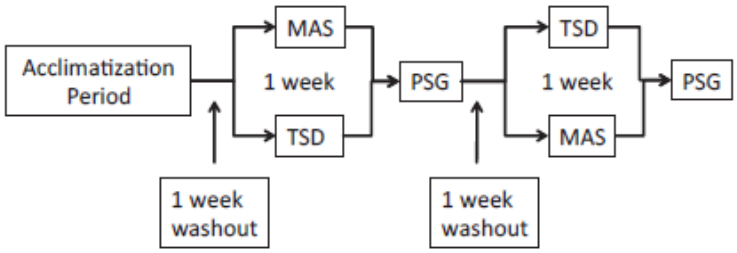

Figure 7: Schematic diagram summarizing the study design. PSG= Polysomnography

CONCLUSION

Research should be done in planned and systematic manner. Text books and articles on the research mainly discuss about the community oriented problem. This review article have discussed about the various research design in relation to the field of prosthodontics, which will be helpful in planning a research.

Conflict of interest: None.

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