Université de Montréal

Development and Evaluation of a Research-based Prosthodontic Clinical Record

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A été évalué par un jury composé des personnes suivantes:

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RÉSUMÉ

Introduction: Bien que l'importance de transférer les données de la recherche à la pratique a été largement démontrée, ce processus est toujours lent et fait face à plusieurs défis tels que la conceptualisation des évidences, la validité interne et externe de la recherche scientifique et les coûts élevés de la collecte de grandes quantités de données axées sur le patient. Les dossiers dentaires des patients contiennent des renseignements valables qui donneraient aux chercheurs cliniques une opportunité d'utiliser un large éventail d'informations quantitatives ou qualitatives. La standardisation du dossier clinique permettrait d'échanger et de réutiliser des données dans différents domaines de recherche.

Objectifs: Le but de cette étude était de concevoir un dossier patient axé sur la recherche dans le domaine de la prosthodontie amovible à la clinique de premier cycle de l'Université de Montréal.

Méthodes: Cette étude a utilisé des méthodes de recherche-action avec 4 étapes séquentielles : l'identification des problèmes, la collecte et l'interprétation des données, la planification et l'évaluation de l'action. Les participants de l'étude (n=14) incluaient des professeurs, des chercheurs cliniques et des instructeurs cliniques dans le domaine de la prosthodontie amovible. La collecte des données a été menée à l'aide d'une revue de littérature ciblée et complète sur les résultats en prosthodontie ainsi que par le biais de discussions de groupes et d'entrevues. Les données qualitatives ont été analysées en utilisant QDA Miner 3.2.3.

Résultats: Les participants de l'étude ont soulevé plusieurs points absents au formulaire actuel de prosthodontie à la clinique de premier cycle. Ils ont partagé leurs idées pour la conception d'un nouveau dossier-patient basé sur 3 objectifs principaux: les objectifs cliniques, éducatifs et de recherche. Les principaux sujets d'intérêt en prosthodontie amovibles, les instruments appropriés ainsi que les paramètres cliniques ont été sélectionnés par le groupe de recherche. Ces résultats ont été intégrés dans un nouveau formulaire basé sur cette consultation. La pertinence du nouveau formulaire a été évaluée

par le même groupe d'experts et les modifications requises ont été effectuées. Les participants de l'étude ont convenu que le cycle de recherche-action doit être poursuivi afin d'évaluer la faisabilité d'implémentation de ce dossier modifié dans un cadre universitaire.

Conclusion: Cette étude est une première étape pour développer une base de données dans le domaine de la prothodontie amovible. La recherche-action est une méthode de recherche utile dans ce processus, et les éducateurs académiques sont bien placés pour mener ce type de recherche.

Mots-clés: Recherche-action, Prosthodontie, Prothèses amovibles, La médecine dentaire fondée sur des données probantes

ABSTRACT

Introduction: Although the importance of research translating into practice has been widely recognized, this process is still slow and faces several barriers such as conceptualizations of evidence, internal and external validity of the evidence and high costs of providing large amounts of patient-based outcome data. Patient's dental records contain valuable information that would give clinical researchers an opportunity to use a wide range of quantitative or qualitative information. Standardization of clinical record would allow the interoperability and reusability of data in different research fields.

Objectives: The aim of this study was to design a research-based patient record in the field of removable prosthodontics in the undergraduate clinic of the "Université de Montréal."

Methods: This study used action research methods with 4 sequential steps: problem identification, gathering and interpreting data, action planning, and action evaluation. Study participants included professors, clinical researchers, and clinical instructors in the field of removable prosthodontics. Data collection consisted of a comprehensive literature review on prosthodontic outcomes as well as focus-group discussions and interviews. The qualitative data were analysed using QDA Miner 3.2.3.

Results: The study participants raised several concerns about the deficiencies of the existing patients' prosthodontic record in the undergraduate clinic. They shared their ideas for designing a new patient record based on 3 key objectives: clinical, educational, and research objectives. The prosthodontic outcomes of interest and appropriate instruments as well as the clinical parameters were selected by the research group and were integrated into a new research-based record. The appropriateness of the new record has been evaluated by the same panel of experts and the necessary modifications have been carried out. The study participants agreed that the action research cycle should be continued to evaluate the feasibility of the implementation of this redesigned record in the university-based setting.

Conclusion: This study is a beginning effort to develop a database in the field of removable prosthodontics. Action research is a useful research method in this process, and academic educators are well placed to conduct such research.

Keywords: Action research, Prosthodontics, Removable prosthesis, Evidence-based dentistry

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LIST OF ABBREVIATIONS

WHO GODB	World health organization global oral data bank
COHRI	Consortium for oral health-related informatics
HMDB	Hospital morbidity database
GPRD	General practice research database
CCPDS	Centralized cancer patient data system
SEER	Surveillance, epidemiology and end results
POMR	Problem-oriented medical record
SOAP	Subjective, objective, assessment, and plan
CDMS	Clinical data management system
JCR	Journal citation reports

DEDICATION

To my dear mother who trained me love of life,

To my lovely father who taught me love of knowledge,

To my dear husband who supports me to courageously face disappointments.

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In a journey of this duration there are many people to acknowledge. First, I wish to acknowledge my supervisor, Dr. Elham Emami who was so helpful and supportive during my master program. I wish that this master thesis can make her proud. Secondly, I would like to thank Dr. Claude Lamarche for his thoughtful comments and timely feedback.

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CHAPTER I

LITERATURE REVIEW

1.1. INTRODUCTION

Research in oral health or any health-related disciplines requires access to several sources of health information including dental/medical records, hospital record databases, epidemiological databases, disease and vital registration systems, and health statistics [1, 2]. Consequently, standardized databases are needed for the interoperability and reusability of data in different research fields such as epidemiology, clinical research, and oral health-care services research [3-6]. In fact the use of databases is a cost-effective and methodologically sound approach that will facilitate conducting clinical and comparative effectiveness research [7]. For example, clinical researchers could identify the most effective and most efficient interventions, treatments, and services by having access to information from patient clinical records/charts, and tissue or data repositories [6, 8, 9]. Health services researchers could assess the quality of health-care services using large databases of health-care information made available by health-care providers, institutions, and governmental agencies.

The collection of health-related data by academic institutions, university hospitals, and clinics in a systemic and standardized way and establishment of a university-based dataset would be a major advantage for any institution as it would enable the recording of large amounts of information across a wide range of diagnoses, treatment plans, interventions, and outcomes [8, 9]. To our knowledge, such a research-based recording system in dental academic institutions is still unexplored. This is mainly due to the extensive planning phase, high cost, and lack of the availability of clinical scientists. Therefore, innovative approaches are needed to develop comprehensive clinical recording systems to provide data and to support clinical and oral health-care services research. This task needs the collaboration of both researchers and clinicians in a way that integrates clinical care and

clinical research. This chapter consists of a review of the literature offering background knowledge on this topic.

1.2. CLINICAL DATABASE

1.2.1. Definition

A clinical database is an accurate dataset concerning clinical practice, recorded in an organized way and connected to outcome descriptors [10]. The concept of clinical database has been used to remove the difficulties in creating, designing, and keeping complex information systems for varying amounts of data [9]. It allows retrieving and accessing organized information about patients' histories and clinical findings [11-13].

Databases are composed of fields**,** records**,** and files**.** A field can be defined as a single piece of information; a record is defined as a set of fields; and a file is defined as a group of records [14].

1.2.2. Characteristics

In all databases, there is information that is collected and stored as data elements. This information is retrieved from admission forms, history sheets, and reports of laboratory results, operations, and consultations [13, 15]. In general, clinical information can be collected in one of two ways [10]:

1) As a part of the patient care procedure
2) As a separate information file to be entered into the database

Collection of clinical information in the first way has advantages over the second way. Firstly, the data collection is prospective. Secondly, the quality control of collected information can be improved by using quality control measures as a part of the patient care process. Finally, the cost of data gathering can be decreased by imposing the financial duty on the patient care [10]. Clinical data collection should be well organized, easy to access, and

should not interfere with the patient care process [4, 12, 16]. Since these clinical data are important for health-care decision making, they should be recorded precisely [7, 17].

Clinical databases can be in paper form or electronic form. Although paper-based records are the most used method of recording patient information in hospitals and health centers, electronic-based records are more advantageous [18]. This format of clinical records is more efficient than the paper format because it ensures that the same information is not recorded on multiple occasions. In addition, such records can be shared more quickly across various health-care settings [19-21]. Due to an increase in the amount of data, health care organizations increasingly want to replace their manual systems with reliable electronic systems to reduce the possibility of human error [22].

Data element collection depends mainly on the function of the database [10]. As an example, research databases contain descriptors that are helpful for examining research hypotheses. Similarly, databases that are designed for administrative objectives comprise information that affects administrative decisions [10].

Each clinical database has a distinctive focus that can be as narrow as a specific therapy or as broad as a whole medical/dental record. Clinical database focus is usually one of the following two types [10, 23]:

1) Disease or population specific; or
2) Procedure, intervention, or health technology specific.

In general, in a successful clinical database there exists a balance between the focus and function of the database. Although this concern seems clear, many clinical databases have imprecise focus, and consequently their function changes [10]. During the database collection procedure, considerations include what data is collected, how it is recorded, and for how long it is registered [24, 25]. Often gathering too much or too little data hinders achieving the long-term goals of the database.

The function of a database determines the requirements of the data retrieval process [10]. The retrieval process should be simple and should enable the user to have access to information in a suitable format.

1.2.3. Objectives

1.2.3.1. Objectives in Patient Care

The patient care process requires using clinical databases in different ways. Clinical databases assist health-care professionals to document observations, diagnostic decisions and health-care treatments, and to exchange information. Also, these databases help physicians to better understand diseases and treatment procedures. Furthermore, clinical databases can be used to improve diagnostic processes. Finally, they are a functional tool to improve the outcome of the delivered patient care by predicting expected outcomes with alternative therapies [7, 12, 17, 24, 26].

Clinical databases can gather information in response to patient care needs in different forms including patient-oriented analyzing and patient-group reporting. The main function of patient-oriented analyzing is creating information related to health care, concerning each individual patient. The management of the patient's health-care process (including planning and controlling), the prognosis procedure, and the critical review of a completed treatment are the principal aims of patient-oriented analyzing [27, 28].

In patient-oriented analyzing, there may be problems due to inadequate clarity of data presentation and incomplete collected data. For this reason, data recording has to be complete, accessible, and unambiguously connected to a single patient.

The purpose of patient-group reporting is creating helpful information about a predefined group of patients. These data consist of measures describing quantitative attributes (e.g., the duration of a treatment in terms of the mean, the standard deviation, etc.) or the frequency of certain conditions (difficulties, diagnoses, etc.). The other typical

aim of patient- group reporting is recording essential information on cost benefit structures and on details of the institution's work processes. In addition, identifying problems and reviewing intervention outcomes require monitoring the quality indicators of the institution's work processes. Problems often occur in patient-group reporting due to incomplete data recording, which leads to the cost and quality of patient care not being accurately reported. Therefore, patient-group reports must be precise and comprehensible based on reliable and valid collected data [27, 28].

1.2.3.2. Objectives in Education

A clinical database can be a helpful tool for the education and training of health-care professionals. It provides a useful tool for evaluation of students' actions. Furthermore, it has a key role in providing an excellent example of clinical problems and an explanation of courses of diseases [8, 26].

1.2.3.3. Objectives in Research

Clinical databases provide enormous amounts of patient data. These data are useful resources for different types of studies including observational and epidemiological studies, as well as clinical trials [1, 8, 29]. Clinical databases help observational studies by providing organized information on a large sample of patients.

Epidemiological studies are conducted in specified populations by studying the distribution and determinants of health-related states or events [26, 30]. Precise clinical databases relevant to the diagnosis and demographic characteristics of patients can be used to determine incidence and prevalence rates, risk factors, and chronological trends [23, 26, 31, 32].

In clinical research, the role of a clinical database is to gather all relevant information with the goal of improving health. It can also be used to evaluate new diagnostic or therapeutic procedures. In addition, it can be a useful resource for planning an

original study based on previous observations. Finally, new scientific insights can be obtained through the analysis of collected data [33].

In general, clinical databases contribute in expanding clinical research in three different ways [1, 4, 8, 10, 26, 34-36]:

1. They create precise information for the evaluation of the course of diseases, with the purpose of detecting the starting points for generalization.

2. The use of clinical databases during the preparation of scientific clinical studies may facilitate the selection of patients with defined characteristics (e.g., all female patients with burning mouth syndrome) for a specific study. This selection, in turn, forms the basis for a scientific study that must be designed and documented separately.

3. For research studies, clinical databases can provide requested data for each patient participating in the study.

Furthermore, clinical databases contribute to the quality of clinical trials by ensuring the continuity and consistency of observations made by different examiners over the years[10, 37, 38].

In health outcomes research, clinical databases help to provide data to cover themes of outcome studies such as safety, effectiveness, efficiency, and timeline [39, 40]. Over the last several decades, medical research and technology have been improved to prevent, to diagnose, and to treat diseases, while questions are increasingly being asked about these technologies and their effectiveness in clinical practice [39-41]. The main goal of health outcome research is to improve care and to prevent diseases. It plays an important role in shaping healthcare decisions and policies [41]. The main problem in conducting health outcome research is unorganized databases and unknown data quality. An organized clinical database can provide scientific evidence related to the decisions taken by all who participate in patient health care [39-41].

1.2.3.4. Objectives in Administration

Clinical databases play an important administrative role in health-care institutions. Administrative uses of clinical databases have an effect on all phases of health-care delivery [26]. They allow health-care institutions to select and design efficient work processes as well as to receive the correct reimbursement for their services. Clinical databases are used to generate reports and to improve office management [42]. In addition, in the event of legal proceedings, adequate medical documentation in clinical databases can have positive implications for health-care institutions [26].

1.2.3.5. Objectives in Health Care Quality Management

Clinical databases provide suitable information for medical audit and for systematic quality monitoring [8, 9, 17, 43]. They have been frequently used in health technology assessment. In other words, clinical databases are essential elements to support clinical and health-care policy decisions [10, 26, 44-47].

1.2.4. Examples of Successful Databases

A number of oral health and dental databases as well as several medical databases have been developed and have been successfully implemented in different organizations and institutions.

The World Health Organization Global Oral Data Bank (WHO GODB) was established in 1969 to fill the gap of data on oral health status and oral disease process. This oral health information system is categorized into the following interrelated subsystems [48, 49]:

- Epidemiological surveillance
- Service coverage of the population
- Service records and reporting
- Administration and resource management
- Quality of care

- Oral health program monitoring and outcome evaluation

The GODB databank has met all the requirements for the collection of complete and precise oral health information [48, 50]. In addition, the GODB gathers relevant information from sources that are not in the scientific literature, e.g., reports prepared for the ministries of health [49]. Over the years, this databank has been used as the main international reference for global oral health epidemiology. Currently, the WHO GODB includes 1,850 data sets on dental caries from 178 countries. Standard criteria and methodology are checked by WHO for each dataset before it is accepted into the GODB. Implementation of preventive oral care strategies and programs will be improved by the collected data in the GODB [48, 49].

The Consortium for Oral Health-Related Informatics (COHRI) was created in 2007 to establish an oral health data repository that can accept and integrate data from different dental data sources [51]. The COHRI will support users' research or decision-making needs by allowing exploring and extracting information. This database is the result of collaboration between 20 dental schools using the same Electronic Health Record platform [51]. The COHRI will provide useful data for such diverse clinical research studies as randomized prospective clinical trials, retrospective case control studies, cross sectional studies, and cohort studies. It will help outcome assessment for patient care, and will allow exploring the relationships between oral health and systemic diseases. It also allows measuring student clinical performance, determining the accuracy of treatment planning, and validating educational outcomes.

The Hospital Morbidity Database (HMDB) is a database conducted by the Canadian Institute for Health Information since 1960 [52]. The HMDB contains administrative data elements, clinical data elements, and demographic data elements. The aim of this databank is recording, processing, and analyzing diagnoses and procedures for all hospital separations (number of discharges and deaths). In addition, it collects data for federal agencies such as Statistics Canada.

The General Practice Research Database (GPRD) is the biggest computerized database in the world, consisting of anonymous patient data. Data in the GPRD have been collected by contributing general practices throughout the United Kingdom continuously since 1987. To date, it has collected information on approximately 3 million patients [53]. Information collected from GPs includes: demographic data, medical diagnosis, treatment outcomes, miscellaneous patient care information (e.g., smoking status, height), and laboratory results. As the GPRD contains demographic and clinical details of patients, it can be used as a functional resource to conduct pediatric drug utilization and pharmacovigilance studies as well as to study rare adverse events [53, 54].

Another example of a clinical database is the Duke University Medical Center Databank that was created in 1969 in order to improve health care for patients with cardiovascular diseases. The collected information in the Duke databank focuses on therapies or specialized care for these specific patients. In this university medical center databank, the patient care procedures are followed prospectively and so they can be linked to long-term outcomes. Using the Duke databank, physicians can learn from previous experience, resulting in improvement of patient care. Furthermore, this databank is recognized as a useful resource for research studies and administrative functions [10, 55-59].

The Centralized Cancer Patient Data System (CCPDS) and Surveillance, Epidemiology and End Results (SEER) are two more examples of successful clinical databases in the United States [10, 60-63] . The CCPDS and SEER are used to collect high-quality data on cancer cases in American hospitals. Data for SEER and CCPDS have been collected since 1973 and 1977, respectively.

1.2.5. High-Quality Clinical Databases

The need for development of high-quality clinical databases for use as a reliable resource in clinical practice, evaluation research, clinical audit, and evaluation health

technologies is well recognized [64]. The quality of data is a main concern for each database user and determines the value of the clinical database [42, 43, 65-68].

Data quality is determined by a great number of diverse attributes [42, 69]. However, the definitions of these data quality attributes are often unclear or unavailable [67]. According to the literature [68-72], the most important cited data quality attributes are "accuracy" and "completeness." Data accuracy is the amount of conformity to the truth of the data recorded in the database. Data completeness is the extent to which all required data are registered [42].

Wyatt and Sullivan (2005) proposed seven criteria for evaluating the quality of information of a clinical database [73] (Table 1.1). Black and Payne (2003)presented quality assessment criteria based on database coverage and accuracy [43]. According to these criteria, the assessment of database coverage should be based on: representativeness of the registered population, completeness of the recruitment of each eligible individual, completeness of the collected data for each individual, and finally collection of all the necessary variables in the database [9, 43]. Database accuracy is evaluated by the following criteria: clear and unambiguous definition of data variables, standardization in data collection and data coding, and independent observation of the outcomes [9, 42, 43]. The completeness and accuracy of clinical databases can be increased by developing organized and structured clinical documentation [8, 9].

Table 1.1: Quality criteria for patient data (adapted with permission from Wyatt and Sullivan [73])

Criterion	**How to test it?**
Accurate	Comparison with a gold standard source of data.
Complete	Percent of missing data at a given point.
Timely	Delay from the event the data describes to its availability for use on the information system.
Relevant	Amount that data alter decisions or actions of the user; the impact of leaving an item out of the dataset.
Appropriately represented	Degree of structuring and coding of items.
Relevant detail included	If data are detailed enough to support decisions.
Relevant context included	Is there enough context to support appropriate interpretation of data?

1.3. CLINICAL DOCUMENTATION: HEALTH-CARE PATIENT RECORD

1.3.1. Definition and Content

The patient record is a collection of information concerning patients and their health care, gathered during the patient's health-care procedure. It includes a variety of important elements such as patient history, administration of drugs and therapies, test results, the details of clinical findings for each patient, and summarized reports [8, 12, 17, 24]. The data retrieved directly from patients and from clinical records and laboratory results may be grouped as patient findings [24]. The essential requirement of health-care providers is maintaining the complete and accurate medical record, which is generally considered as a certification prerequisite as well. The patient record provides data for continuity of care and is crucial in the occurrence of a malpractice insurance claim [74, 75]. According to Wyatt (1994) there are four main categories in each health-care record [24] (Figure 1.1) .

1) Identifiers: Contain identity numbers, sociodemographic data, and supplementary information if necessary, including family doctor, health insurance information, etc.
2) Patient findings: Include observations and history data, which can be subjective data (such as symptoms) and objective data (such as clinical signs, X-ray results, and laboratory results).
3) Hypotheses: Include assessment and plans like diagnosis, problem list, and possible explanations.
4) Actions: Contain therapy and follow-up.

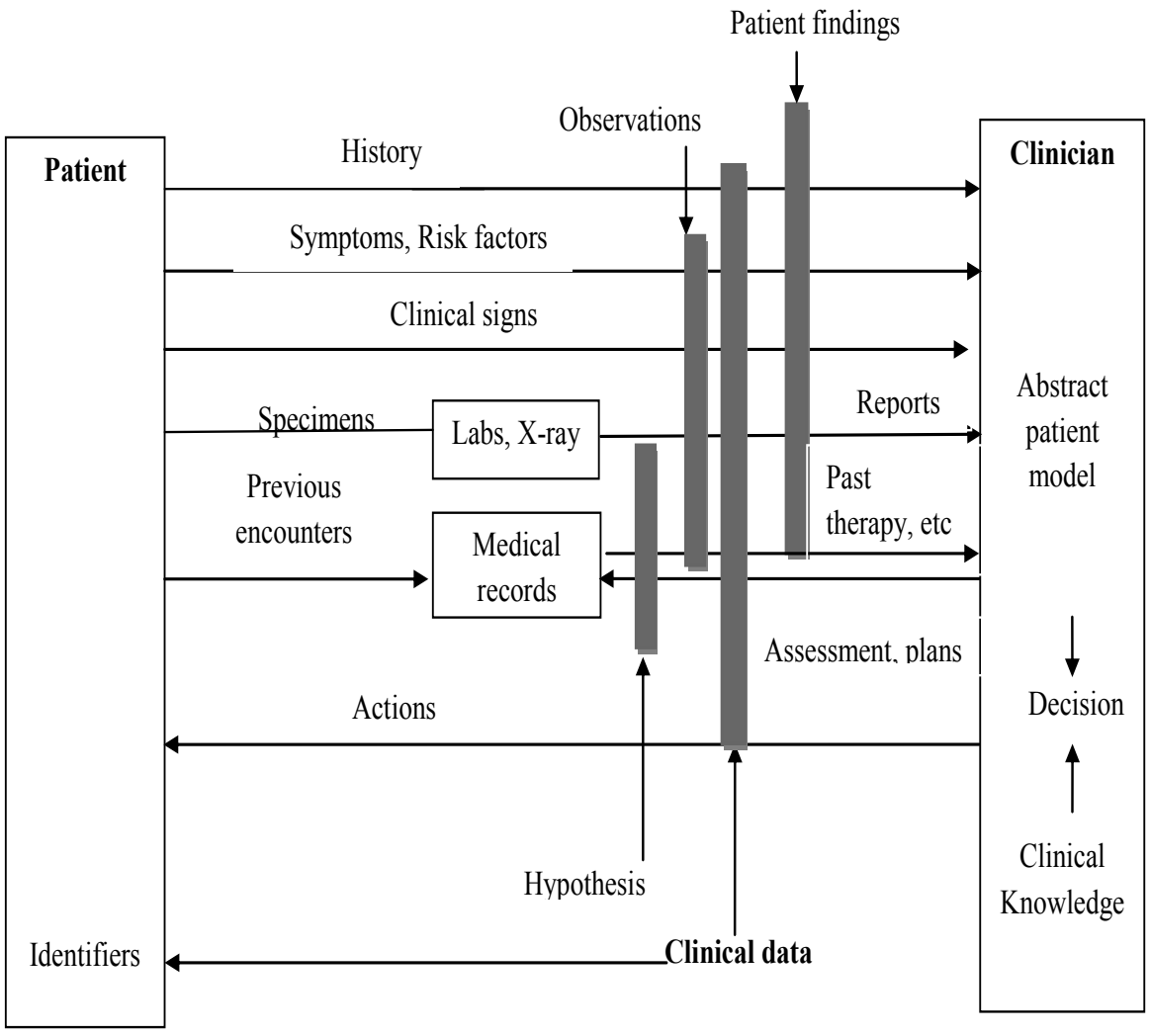

Figure 1.1: Categories of clinical data (adapted with permission from Wyatt [24])

1.3.2. Functions

Recording what happened between physician and patient in a reliable, legible, and objective manner is the principal function of a patient health-care record [76]. Medical records maintain the continuity of care by documenting the data required to follow up the patient care for the treating clinician or other health-care providers [76, 77]. Clinical patient records are used not only for supporting patient care, but also for secondary clinical purposes including clinical audit, research, epidemiology, and resource allocation [4, 15] (Figure 1.2). Additionally, the patient care record could become a legal document and could be used in litigation [76, 77].

1.3.3. Standardization

The most important advantage of standardized patient records is the ability to gather enormous amounts of organized information containing diagnosis and interventions, which creates a useful source for analysis [8, 9].

Development and implementation of evidence-based standards in clinical records is mandatory because:

- Good records monitor patients' health status and health care [78]
- Accurate record-keeping guarantees a suitable and systematic flow of the treatment plan/s
- Clinical records are reliable tools which systematize all important parameters and aspects of short- and long-term results [15, 79-81]
- High quality patient records influence the effectiveness of care [78]

Furthermore, standards are necessary for sharing and reusability of data in clinical research including mechanisms of human disease, epidemiology, behavior studies, outcomes, and health services research [4].

Richmond et al. (2007) examined two hundred dental records of edentulous patients attending the University of Manchester School of Dentistry [82]. They found that only 67.8%

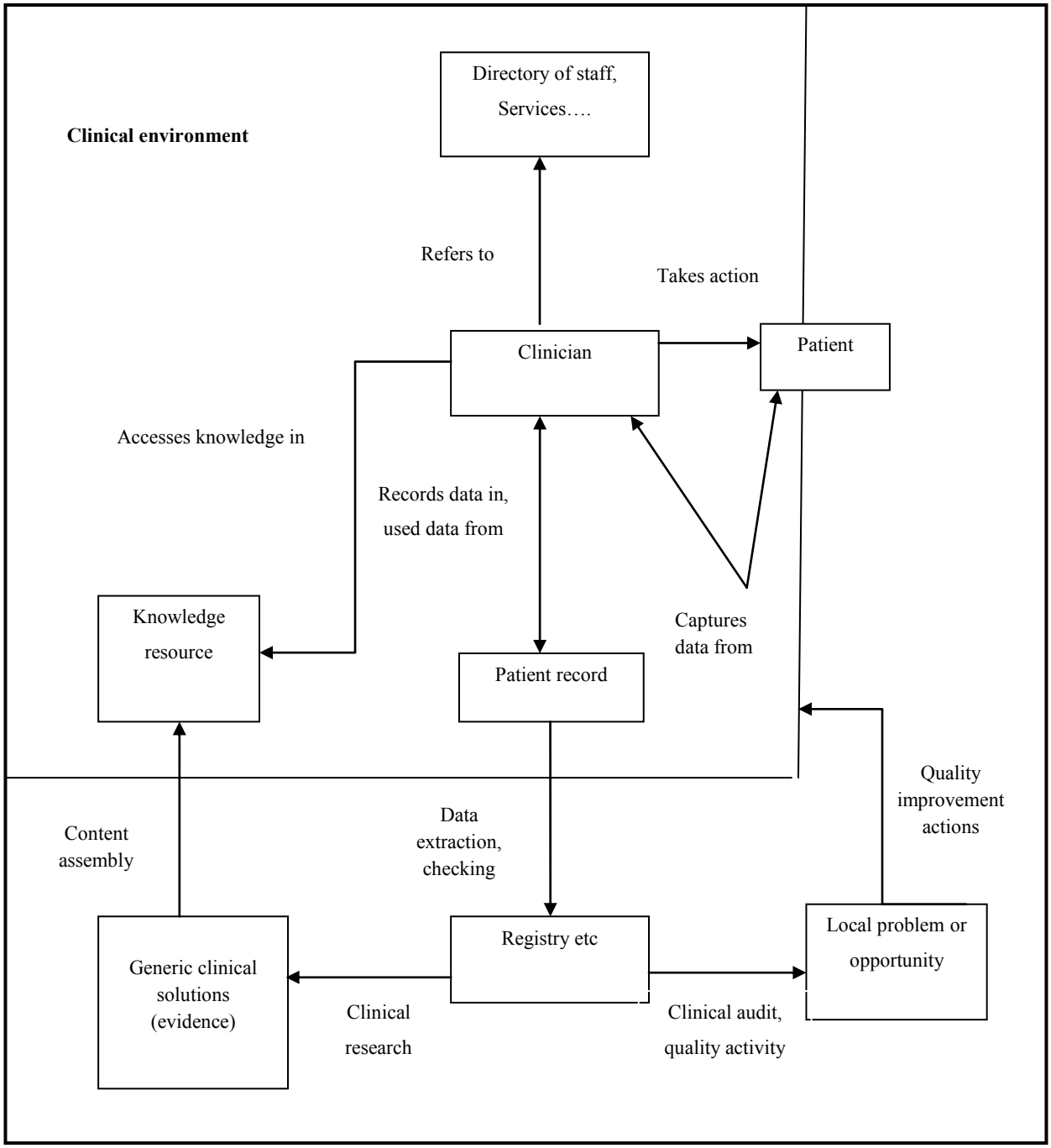

Figure 1.2: Information flows in clinical and non-clinical environment (adapted with permission from Wyatt and Sullivan [73])

of the written records were rated as good. Helminen et al. (1998) assessed the quality of oral health record-keeping in public oral health-care services in Finland [83]. They reported that the notes on the patients' occlusion and temporomandibular joint function were omitted in 63% of cases and that 89% of dental records contained missing information about oral soft tissues. An audit of 184 Worcestershire general dental practitioners revealed a wide variation between dentists' clinical record-keeping [84].

Martin Garcia et al. (2008) analyzed dental records in two steps. First, they used 46 criteria to evaluate quality of 50 dental records [85]. The results showed that no record was without error. Then, in order to correct the deficiencies detected in the first evaluation, they produced a new model of dental record which was implemented for two years. Re-audit showed that appropriate fulfilment was reached in 29 criteria while in the first phase the standards had been reached in only 12 criteria [81]. In another research study, Osborn et al. (2000) found a noticeable discrepancy between the American Dental Association guidelines and dentists' perception of dental record adequacy [86].

A retrospective audit of 316 dental records was conducted in 13 selected institutional providers of dental care in New York City in order to assess the level of documentation presented in the dental record [64]. At the time of the initial audit, more than 50% of these institutions were unable to present all the data requested. Few of the audited dental records were without deficiencies. Also, in most institutions the documented result of the intra-oral examination was lacking. A plan to correct the identified deficiencies was implemented. The follow-up audit showed significant improvement in the level of recorded information.

In fact, standards have a key role in improving the effectiveness and quality of clinical documentation. Implementation of standardized clinical documentation will minimize difficulties encountered in data extraction. Evaluation of available standards in clinical documentation is the basic requirement for developing an optimum database [13, 15, 87, 88].

According to Weed (1968), the father of the problem-oriented medical record, one example of well-organized record is the "SOAP" model [89]. The SOAP format derives from the problem-oriented medical record (POMR) as a guide for health-care providers to collect and organize the patient data [90]. The POMR actually focuses on the idea that the most useful way of organizing clinical data is through the concept of patients' problems and their evolution [91]. Consequently, decisions taken during patient care in POMR are related to those problems. In this way, health-care providers can have access to the patients' problems, the frequency of the problems, and the received treatments. The POMR provides a functional patient form with standardized data that can adapt without difficulty to new information technologies. Additionally, easy accessibility of the standardized collected data in the POMR encourages continuing assessment of the health-care plan [89-91].

Using the "SOAP" note, the basic POMR was developed [87]. The SOAP format can make a structure for documenting clear and concise data to improve communication among health-care professionals, as well as to improve recording of the patient's concerns and health issues [90]. The SOAP format includes [89-94]:

- S: Subjective, is the patient's perception and outcome. Items to be included in this section are patients' concerns, any allergies, medical history, and complete patient history.
- O: Objective, is the observation of the clinician. Information in this category includes observations of patient clinical examinations, and laboratory and X-ray test results.

- A: Assessment, is the diagnosis, measurement, and evaluation. This part is the conclusion reached based on the subjective and objective sections, which should be complete in order to dictate the plan.
- P: Procedures and plan, are the treatment plans, treatment received, and follow-up/s. This part is divided into three sections. One section is all the medications, or devices recommended by the physician for the patient. The next section is a list of the expected results of the considered diagnostics. The third section is used for recording all referrals or consultations.

Documentation without a standardized structure may be time consuming to complete and confusing.

1.4. CLINICAL DATA MANAGEMENT SYSTEM

A clinical data management system or CDMS is a generic name for a tool or set of tools to manage and organize the data in a computer [33, 95]. The most important task of CDMS is collecting and storing the enormous quantities of scientific data, which is the key to continuing research and clinical trials. A CDMS can be used as an individual unit or can be part of a set of clinical trials management tools. The CDMS can generally be in two different forms, paper-based and electronic data capturing system. In paper-based systems, the data are filled out by hand. Then, the data on forms is transferred to the clinical data management systems tool. In this phase, there are two ways for data entry. In single data entry, there is one data entry operator while in double data entry, two different data entry operators enter the data separately. Then, the system compares the entered data and in the case of value conflicts, verification should be done. The data in the CDMS are then transferred for data validation [26, 96-98]. In electronic data capturing systems, the data are directly uploaded on the CDMS and they can then be viewed by the data validation team [95, 99].

1.4.1. Utilization of Clinical Data Management System

The most important use of a CDMS is to collect, to verify, to code, and to prepare the organized data for further statistical analysis. In addition, this tool or set of tools helps to conduct diverse clinical research studies [33, 100]. CDMS can be a useful resource for various groups such as organizations carrying out research studies, clinical research sites that are participating in studies, and finally external organizations (labs). Also, the accurate collected patient data in the CDMS can be used by statisticians for statistical analysis to verify the usefulness of the conducted clinical studies [13]. Generally, multiple uses of clinical data are ensured if the responsibilities of the data management system and analysis questions are determined earlier. As an example, in an individual patient's care the results of all examinations are recorded, while for clinical study, according to the study question, special relevant characteristics are recorded [26, 29, 47].

CHAPTER II

METHODOLOGY

2.1. PROBLEMATIC, HYPOTHESIS, OBJECTIVES

Patients' dental records contain valuable information that can give clinical researchers an opportunity to access and use a wide range of quantitative or qualitative information for conducting clinical and oral health outcomes research [8, 9]. However, reusing clinical data can be complicated for a number of reasons including the inaccurate and unstructured nature of the oral health care record, the poor maintenance of accurate and complete clinical data over time, lack of outcome of interest as well as heterogeneity and diversity of interests between clinical researchers, and finally technical issues related to the infrastructures [1-6, 78, 93, 101]. Thus, an effective and efficient record-keeping system could facilitate this process and overcome some of these problems. An organized and research-based dental record could be a reliable tool to keep and organize important clinical parameters and aspects of short- and long-term outcomes [15, 79-81]. The aim of this study was to design and develop a clinical and research-adapted record in the field of removable prosthodontics.

2.1.1. Hypothesis

Our hypothesis was that the prosthodontic clinical record in the removable department could be redesigned to adequately respond to clinical and research objectives.

2.1.2. Objectives

Our long-term objectives are itemized as follows:

Educational objectives

1. To create a research training environment for clinicians and dental students with the goals to:
    - Introduce an evidence-based approach in clinical practice
    - Provide support and education in research
2. To assess clinicians' response to and acceptance of the research-based prosthodontic clinical record
3. To provide a useful model for other departments and institutions

Clinical and patient-based objectives

1. To improve oral health outcomes for patients
2. To facilitate auditing of clinical services

Research objectives

1. To access a wide range of research data
2. To conduct different types of clinical research

2.2. RESEARCH METHODOLOGY AND METHOD

2.2.1. Study Design

A qualitative approach and action research method were used to conduct this study. Action research is a method in which participants help one another by working in a group. This methodology is usually employed in educational studies where the research process assists the participants (clinical professors and clinical researchers) to carry out a needs assessment, document the process, analyze the data, and make decisions to achieve their objectives. As demonstrated in figure 2.1, an action research study has several phases:

identifying the problem, gathering and interpreting data, action planning, acting on evidence, and action evaluation and interpretation [102-112].

This research methodology can improve and strengthen the links among evidence, research, and practice [108, 109]. According to Bell (1999), the action research approach is attractive to both practitioners and clinical researchers because the research will inform and influence their practice [113]. In this type of research, the focus of collaboration is on the interaction between a group of practitioners and a research team.

A practitioner is a person who understands the field from working 'from the inside' and from professional experiences. He/she knows the historical background of the institution and has the knowledge and experiences provided by working within a clinical setting and dealing with its related issues. The nature of any collaboration between the practitioner and researcher is variable. It depends essentially on its preliminary goals and ranges from simple periodic participation to intensive active involvement [108, 113-115].

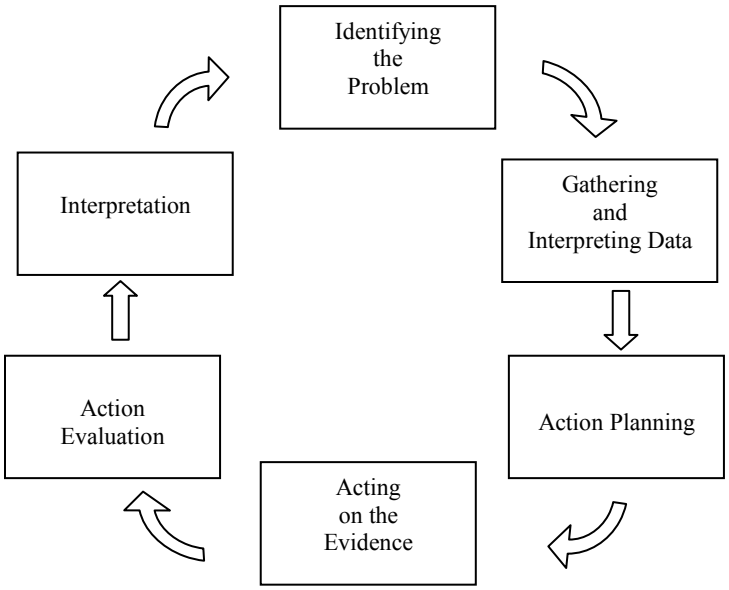

Figure 2.1: Action research cycle model (adapted from Susman, 1983)[116]

2.2.2. Study Participants

This study used purposive sampling to recruit participants. Purposeful sampling is based on selecting participants who are information-rich [117, 118].

Participants in this study included:

- Five full-time professors (two clinical researchers and three clinicians) in the field of prosthodontics in the Department of Removable Prosthodontics at Université de Montréal.
- Nine part-time professors (clinicians) in the Department of Removable Prosthodontics at Université de Montréal.

2.2.3. Data Collection and Study Phases

Data were collected between December 2010 and October 2011. In total, 6 focus groups and 10 interviews of 60 to 120 minutes duration in French and English were conducted and audio-recorded by a trained interviewer at the Faculty of Dentistry of the Université de Montréal.

Different phases of this study comprised (Figure 2.2.):

Phase 1: Problem identification

Focus group discussions as well as semi-structured, open-ended, individual (face-to-face) interviews were carried out to assess interviewees' experiences and perceptions about prosthodontic clinical records and to develop criteria for designing new research-based records.

During individual interviews and focus groups, several questions were asked to gather information about the:

- Person's knowledge and perception on ideal clinical records

- Record-keeping needs, barriers, and difficulties
- Opinions on how to implement a standardardized research-based record.

These questions were used to guide the interview in such a way that the interviewers and interviewees could address issues as they arose. The interviews continued until a saturation level was reached, i.e., no new information could be obtained with more and new interviews [119].

Through discussions with the other participants, everyone in the focus group was able to reflect to the experiences and opinions of the others. The participation of several and different types of professionals during the discussions enabled new perspectives to be introduced [120, 121].

Phase 2: Collection of evidence-based data

An extensive literature review was carried out to identify the main outcomes of interest in removable prosthodontic dental records as well as the standardized data sources that could be linked to answer specific research questions.

We searched systematic reviews in the journals indexed in the most recent edition of the Journal Citation Reports (JCR; 2010), available at http://isiknowledge.com/jcr. We considered all journals under the subject "Dentistry, Oral Surgery & Medicine" that had prosthodontics as the main field of interest. Periodicals about oral implants were also considered, as they likely contain a substantial number of articles about dental prostheses. Table 2.1 shows the titles and respective impact factors for the journals considered.

The Ovid Medline electronic database was searched from 1950 to December week 3 2010 and complemented by hand searching for published randomized controlled trials in English in the field of removable prosthodontics in the six main prosthodontic journals.

In order to obtain reports of systematic reviews, we searched the Medline employing abbreviated titles combined by the “OR” Boolean term. We compiled an initial list of search terms, including index terms and text words. We created groupings of words that combined together with the Boolean term “OR.” The results were combined together with Boolean “AND.”

Titles were combined as follows: (dental prosthesis OR exp dental implants OR dental prosthesis, implant-supported OR dental prosthesis repair OR denture OR denture bases OR denture liners OR exp denture, complete OR denture design OR denture OR denture, overlay OR denture, partial OR denture, partial, immediate OR denture, partial, removable OR denture, partial, temporary) AND ("clinical implant dentistry & related research".jn. OR "clinical oral implants research".jn. OR "implant dentistry".jn. OR "international journal of prosthodontics".jn. OR "journal of oral rehabilitation".jn. OR "journal of prosthetic dentistry".jn.) AND (exp "Outcome and Process Assessment (Health Care)" OR exp Treatment Outcome).

Table 2.1. List of the prosthodontics or oral implantology journals in the JCR - 2010.

Full Title	**Abbreviated Title (ISO)**	**Impact Factor**
Clinical Implant Dentistry and Related Research	Clin Implant Dent Relat Res	2.803
Clinical Oral Implants Research	Clin Oral Implants Res	2.756
Implant Dentistry	Implant Dent	1.455
International Journal of Prosthodontics	Int J Prosthodont	1.423
Journal of Oral Rehabilitation	J Oral Rehabil	1.462
Journal of Prosthetic Dentistry	J Prosthet Dent	1.309

The search yielded 178 papers. Looking at the title and abstract, 117 articles were discarded and consequently 61 articles remained for evaluation at the full text stage. These papers were analyzed to reject articles that did not meet the selection criteria. Five papers were rejected at this stage because they were not clinical trials. The final number of paper included in the review was 56 articles (Figure 2.3).

After determining the main treatment outcomes in removable prosthodontics, we defined validated measurement tools for measuring the prosthodontic outcomes by an extensive literature review. As an example, after defining bone resorption as a treatment outcome, we reviewed the literature to find the most appropriate tools to measure this outcome. We considered the following criteria in the choice of these tools: accuracy, pertinence, and relevancy.

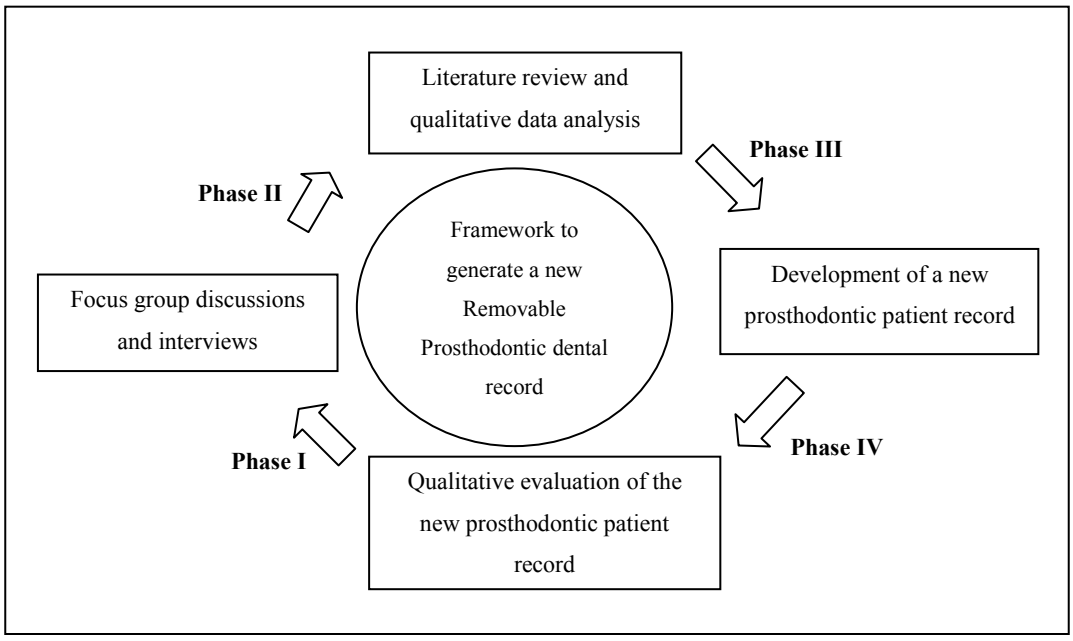

Figure 2.2: Study phases

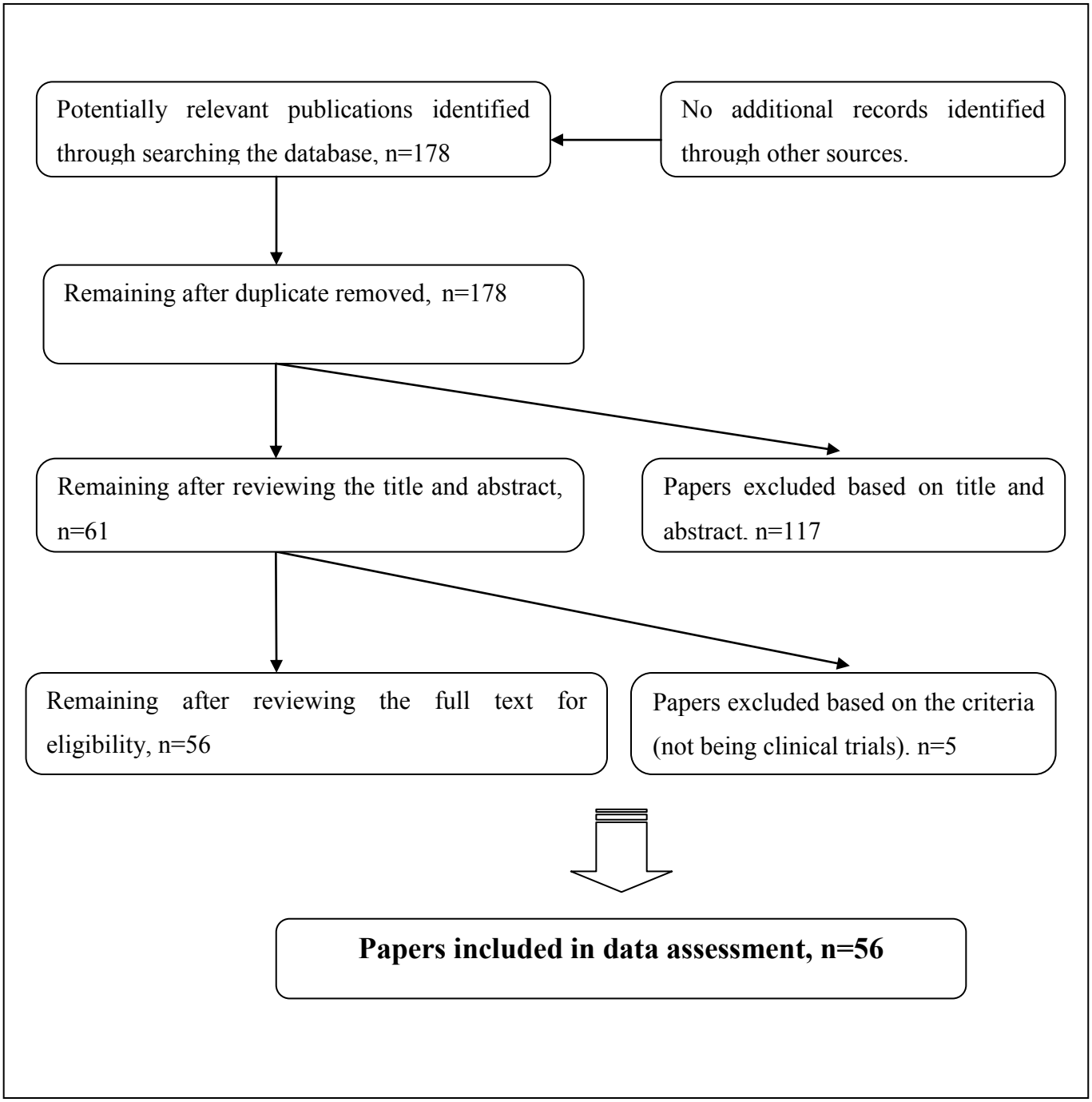

Figure 2.3: Flow chart of search strategy

Phase 3: Action planning

A) Development of new prosthodontic dental record

Based on the literature review and data gathered during qualitative evaluation, the current undergraduate prosthodontic patient record was redesigned and restructured.

B) Evaluation of the new prosthodontic dental record

The completeness and appropriateness of the new dental record was evaluated by complementary interviews with the same panel of experts and those individuals participating in the initial interviews. Necessary modifications were carried out according to experts' opinions. Any differences among members of the group were resolved through discussion with the members of the action research team.

2.2.4. Study Analyses

The analyses included debriefing, transcription, thematic analyzing, and interpretation of interviews and focus groups. The debriefings assessed the data collection and encapsulated the main findings. The computer qualitative software QDA Miner (version 3.2.3, 2009, Provalis Research Corp, Montreal, QC, Canada)

was used to index the transcript and to assign codes to each segment. The interviewers assessed the interview transcripts and described the emerging themes and key points to action research group participants [122-124]. We used triangulation to establish more credibility in the qualitative results. Triangulation is an approach that combines more than one research strategy to make sure that the presented results of the study are true and clear [125-129]. In this study, researcher triangulation was used, a process that included different researchers reviewing the data at the different stages. Two members of the research team read all transcripts and defined the themes separately. When their opinions differed, the two research team members came to agreement through discussion in order to avoid individual

interpretation and bias as well as to achieve validity and reliability of the analyzed data [125-130].

2.3. ETHICAL CONSIDERATIONS

This study was approved by the Université de Montréal Research Ethics Board. An informed consent was obtained from all individuals participating in this study.

2.4. CANDIDATE'S ROLE IN THE PROJECT

The candidate developed the protocol for this study, conducted the different phases of the study, gathered and analyzed data, and designed a new dental record in the field of removable prosthodontics.

The candidate's abstract of this research project has been accepted in the 90th General Sessions & Exhibitions of the International Association of Dental Research. The candidate will present the results of this research project in June 2012. The candidate will submit the article included in the chapter III of this master thesis for publication in a prosthodontic journal.

CHAPTER III

RESULTS

3.1. THE MANUSCRIPT

DEVELOPMENT OF AN EVIDENCE-BASED PROSTHODONTIC RECORD: AN ACTION RESEARCH STUDY

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Keywords: Action research, Prosthodontics, Removable prosthesis, Evidence-based dentistry.

DEVELOPMENT OF AN EVIDENCE-BASED PROSTHODONTIC RECORD: AN ACTION RESEARCH STUDY

ABSTRACT

Objectives: The aim of this study was to design a research-based patient record in the field of removable prosthodontics in the undergraduate clinic of the "Université de Montréal."

Methods: This study used action research methods with 4 sequential steps: problem identification, gathering and interpreting data, action planning, and action evaluation. Study participants included professors, clinical researchers, and clinical instructors in the field of removable prosthodontics. Data collection consisted of a comprehensive literature review on prosthodontic outcomes as well as focus-group discussions and interviews. The qualitative data were analysed using QDA Miner 3.2.3.

Results: The study participants raised several concerns about the deficiencies of the existing patients' prosthodontic record in the undergraduate clinic. They shared their ideas for designing a new patient record based on 3 key objectives: clinical, educational, and research objectives. The prosthodontic outcomes of interest and appropriate instruments as well as the clinical parameters were selected by the research group and were integrated into a new evidence-based record. The appropriateness of the new record was evaluated by the same panel of experts and the necessary modifications were carried out. The study participants agreed that the action research cycle should be continued to evaluate the feasibility of the implementation of this redesigned record in the university-based setting.

Conclusion: This study is a beginning effort to develop a database in the field of removable prosthodontics. Action research is a useful research method in this process, and academic educators are well placed to conduct such research.

INTRODUCTION

Although the importance of practice-based research has been widely discussed and documented, this process is still slow and faces several barriers such as conceptualizations of evidence, internal and external validity of the evidence, and high costs of providing large amounts of clinical and patient-based outcome data.[1, 2] Furthermore, retrieval of data to conduct clinical and comparative healthcare research requires access to clinical records.[3-7] However, these records are often inaccurate or have an unstructured format that makes the use, interoperability, and interpretation of the data difficult or impossible.[3-5, 8, 9] Several audits in different countries have reported that the quality of dental records is not optimal and many dental records are missing information.[10-15] Therefore, in order to overcome some of these barriers and to decrease the gap between research and practice, we need to implement strategies that support the process of record keeping and access to these records. In the field of prosthodontic research as for other research domains, a university-based dataset can facilitate this process because it will make it possible: 1) to monitor patients' oral health status and prosthodontic care,[16] 2) to collect large amounts of information across a wide range of interventions and to aggregate a wide range of quantitative and qualitative data,[8, 9, 17-19] and 3) to systematize all important parameters and aspects of short- and long-term oral health outcomes.[10, 20-22] In addition, through this strategy, the clinicians will be exposed to a research-supportive environment that will promote evidence-based dentistry. In this regard, some initiatives have been undertaken to develop a database and to improve the quality of oral health recording systems. As an example, since 2005, several dental schools in North America have formed a Consortium for Oral Health-Related Informatics to develop a data repository that can be shared within these universities.[2]

To our knowledge a specific dataset to facilitate conducting prosthodontic research in university-based settings has not yet been introduced. Therefore, the objective of this

research project was to create an evidence-based patient record in the field of removable prosthodontics that can be used as the basic elements of a prosthodontic database. This record will promote the standardization of the clinical recording system, and will allow dental students to become familiar with research tools and instruments. Additionally, it will provide data for prosthodontic clinical and health-care services research in university-based settings.

MATERIALS AND METHODS

Study Design and Study Participants

This study used a qualitative approach and action research (AR) methods. In health-care settings, action research is a recognized form of experimental research that involves a collaborative process between researchers and clinicians to evaluate and to change practices with the goal of improving performance quality.[23-29] Wadsworth's[30] process was chosen as an application of AR. This approach is unique since it links researchers and clinicians synergistically to perform a cycle of activities including problem identification, gathering and interpreting data, action planning, action on the evidence, and action evaluation and interpretation (Figure 1).[24-29, 31-33] Accordingly, this study comprised several phases to reach its objectives.

The study was approved by the Ethics Committee of the Université de Montréal, and an informed written consent was obtained from each participant.

The purposive sampling technique was used to select study participants who were ''information-rich,'' and had experience in research, teaching, and clinical activities in the field of removable prosthodontics.[34, 35] These included two full-time clinician-scientists, three full-time academic prosthodontists (including the head of the removable prosthodontics unit), and nine part-time clinical instructors in the undergraduate removable

prosthodontics clinic at the Université de Montréal. The demographic and academic characteristics of the study's participants are presented in Table 1.

Study Phases and Data Collection

Data were collected during the different phases of the action research cycle. In the first phase, "*Action reflecting/ Problem identification*," we conducted 6 focus-group discussions and 13 individual interviews of 60 to 120 minutes' duration between December 2010 and October 2011. All focus-group discussions and interviews were audio-recorded and transcribed by a trained interviewer. Using an interview guide, the study participants were invited to give their views about strengths and limitations of the existing clinical record in the undergraduate clinic and to provide their comments on improvement.[36, 37] This phase helped to develop the criteria for designing new research-based prosthodontic records.

In the second study phase, "*Gathering and interpreting data*," a systematic review was conducted to identify the main reported outcomes in the field of removable prosthodontics. Electronic databases were searched from 1950 to December 2010 and complemented by hand searching the six main prosthodontic journals as reported in the Journal Citation Reports (2010). The abstract of this systematic review has been presented elsewhere, and the related manuscript is under preparation.[38] According to the results of this systematic review, and the full-time professors' research profile and interests, the prosthodontic outcomes of interest were selected. Then, the validated measurement instruments for measuring these selected outcomes were identified.

In the third phase, "*Action planning/ Action on the evidence*," based on the literature review and analysis of the data gathered during the focus groups and interviews, the new prosthodontic record was designed.

Finally, in the last phase, "*Action evaluation and interpretation*," the action research team members evaluated the completeness and appropriateness of the new prosthodontic record based on the criteria developed during phase I and II. Necessary modifications were carried out according to the study participants' comments. In order to minimize the effect of any particular perspective, and to increase the credibility and validity of the results, triangulation techniques were used.[39-42]

Data Analysis

The analysis included debriefing, transcription, thematic analysing, and shared interpretations. The interviews and focus groups were all audio-recorded, transcribed verbatim, and coded. The computer qualitative software QDA Miner (version 3.2.3, 2009, Provalis Research Corp, Montreal, QC, Canada) was used to index the transcript and to assign codes to each segment. In this study, we used thematic analyses, which help to identify, to analyse, and to report the themes within collected data. These processes include text reading and dividing into themes and categories.[43-45] To ensure the credibility and transferability of the data, two researchers in the study team conducted a detailed analysis of the identified code and themes independently, and all research team members reviewed the data at the different stages to check and validate their interpretations.[39-42, 46] As required by qualitative research, the saturation level was considered to estimate the necessary sample size and was achieved by the 6 focus-group discussions and 13 individual interviews.

RESULTS

The thematic analysis of the collected data during the action research process yielded several key concepts and themes, which are summarized below.

Enthusiasm to change and collaboration in planning

This key concept was evident when the professors and clinical instructors agreed to participate in the study, and demonstrated their willingness to collaborate in the improvement of the existing patient prosthodontic record in the undergraduate prosthodontic clinic.

Empowerment in practice, education, and research

This concept was manifested during the first phase of the study. The research participants expressed their views about the weaknesses of the existing patient record. The full-time professors criticized the existing form more than did the clinical instructors. They mentioned that the patient record was outdated and had been developed by a clinician in the removable prosthodontics undergraduate clinic approximately 30 years ago. The head of the clinic mentioned some minor modifications and add-ons that had been made later. These modifications were made to reflect the notion of implant dentistry in the patient record. Three types of weakness in the current prosthodontic patient record were observed by research participants: 1) **Clinical weaknesses:** for most interviewees, the actual clinical form did not allow following up the patients or conducting clinical audit. In addition, the interviewees mentioned that the clinical form was totally theoretical in format. **2) Educational weaknesses:** most of the professors expressed that the information gained by the actual patient record did not allow the students to develop clinical decision-making skills. They would prefer a student training based on a clinical decision-making model and hypothetico-deductive approach.[47] Furthermore**,** they identified a mismatch between theoretical and practical training. They suggested to include in the new patient record several validated measurement tools to help students define patient complaints, to verify clinical parameters, to make a diagnosis and treatment plan, and finally to reassess the patient. In addition, the participants mentioned that the students' clinical knowledge should be expanded by teaching them the most important prosthodontic clinical outcomes. 3) **Research weaknesses:** The clinical researchers stated that the existing patient

prosthodontic record was solely clinical, and was not designed to address research needs. The faculty professors pointed out that research is not attractive to young dental students because clinical training is the main objective of their education. Their wish was to enable active research activities in the undergraduate clinic and to motivate students to be involved in future research careers. Furthermore, they wanted the new patient record to allow gathering of a wide range of data, and conducting different types of clinical research, as well as providing support and education in research.

Barriers to change

Combining research and clinical training was found to be difficult in the undergraduate clinic because of several barriers such as deficient infrastructure, lack of time in the clinical sessions, and lack of research training for clinical instructors. Clinical instructors were more positive regarding the clinical, educational, and research capacity of the clinic and the potential role of a patient recording system in building capacity. Most of the instructors mentioned that by following patient record elements, the students were capable of doing intra and extra oral examinations, asking their supervisors relevant questions, and discussing patients' needs and treatment. The majority of clinical instructors suggested having an easy–to-use, organized clinical form, and to be realistic in the design of the new format in terms of time needed and the clinical setting. They mentioned that the prosthodontic record should facilitate the clinical examination without posing a burden on students and educators. They believed that these records could be used as a trustworthy resource for research needs. However, they mentioned that the reliability of the records would depend on the aptitude of the students and the clinical instructors. In this study the female study participants were more flexible towards accepting the new changes and the older clinicians were less interested in the clinical research activities.

Expanding knowledge

During the problem identification phase, the research team members noted that an extensive systematic review was needed to select the important outcomes in removable

prosthodontic research. The results of this systematic review indicated that there was a significant increase in the selection of patient-based outcomes between each 10-year time interval since 1990.[38] The research participants agreed on the importance of the identified outcomes in the design of new prosthodontic forms.

In the phase of action planning, the new evidence/research-based prosthodontic record was developed, and then was evaluated by the full-time professors. This new prosthodontic record consists of three parts: the first part comprises a series of assessments on the potential risk factors of prosthodontic outcomes. These include assessment of sociodemographic characteristics, medical and dental history, life style habits, dental service use, oral hygiene habits, dental anxiety, and psychological characteristics. The second part constitutes the oral clinical examination form and the assessment of disease-oriented outcomes such as caries, periodontal diseases, denture stomatitis, and alveolar bone resorption. Finally, the third part includes assessment of patient-oriented outcomes such as oral health quality of life, patient satisfaction, and dental visit satisfaction. The full-time professors recommended evaluating the dental record occasionally according to the relevant literature in removable prosthodontics. The study participants agreed that the action research cycle should be continued to evaluate the feasibility of the implementation of this redesigned record in the university-based setting. Several professors expressed their willingness to add a theoretical course and to introduce the new prosthodontic patient record to the undergraduate students.

DISCUSSION

Through this action research study, we have successfully designed and developed an evidence/research-based patient record in the field of removable prosthodontics in the undergraduate clinic of the Université de Montréal.

Our experience showed that applying action research methods ensures the needs, perspectives, and expertise of the participants in the design and implementation of the new prosthodontic record. This patient record will help gather accurate and organized research data in the university-based setting. The research team believed that this approach could create a research-training environment for clinicians and dental students, and will raise awareness about evidence-based prosthodontics. According to the Allison and Bedos survey[48] on the utility of clinical research in Canada , although the vast majority of dental practitioners were interested in research, the implementation of evidence-based health care was found to be difficult.

Nowadays it is recognized that dentistry, as is the case with other health-care fields, requires integrating the concept of evidence-based health. However, the challenges of how to bridge research and dental practice still exist. Research education could be a solution to this dilemma. In this regard, many dental schools have implemented an educational approach that helps promote evidence-based thinking in the context of clinical training.[49, 50] This approach allows behavioural changes in the students and clinicians, favors their dedication to scientific research, expands their knowledge, and increases their willingness to support and invest in evidence-based health care. This would help future dentists to use research evidence to offer the optimal care for their patients.[51-53]

Our results demonstrated that there exists diversity between the views of full-time professors and those of clinical instructors concerning students' research and clinical training. This diversity could be explained by the fact that the professors have different obligations and needs based on their career profiles. All tenure-track faculty members are expected to conduct research activities to achieve their tenure. By contrast, clinical instructors don't have any research responsibility, and they do not generally perform any

independent research. Furthermore, their training and education is mostly limited to practice and they don't receive formal training in education and research.[49, 50, 53]

According to Chapnick et al. (1998), part-time dental instructors have the greatest effectiveness while acting as a facilitators rather than educators.[54] In our study, the full-time professors mentioned that the part-time clinical instructors are important keys in success or failure of the implementation of a new educational/research tool in the clinic. Since these instructors are an important element in success, the following possible strategies could be considered. These include to build the base of the research knowledge and to provide instructional content and methodology by standardizing the medical and dental health record system and facilitating the exchange of information.

For example, the Consortium for Oral Health-Related Informatics (COHRI)[2] is the result of collaboration of 20 dental schools to develop a monograph that could serve as a guide in the acquisition of an oral health information system. The COHRI provides standardized data for diverse clinical research studies by assembling the largest oral health database ever created. It also allows measuring student clinical performance, determining the accuracy of the treatment planning, and validating the educational outcomes.[2] Similarly, some initiatives have been undertaken to improve the prosthodontic clinical recording system. For example, the American College of Prosthodontists has developed a classification system to provide a framework for the organization of clinical observations in removable prosthodontics. The use of this framework facilitates clinicians' communication, clinical outcomes assessment and research.[55, 56] The implementation of this new clinical prosthodontic record will allow powerful data queries on large pools of patient data with relatively low cost and without information and measurement bias. Furthermore, using this record in the undergraduate clinic will enable dental students to improve their clinical and research knowledge. In fact, it will raise research awareness and the essential basics of education.[3, 7] In addition, this newly designed record will help to maintain high standards of

record-keeping, which is a necessary part of quality dental care.[57] Although this new prosthodontic record is designed for the removable prosthodontics clinic, it can also be used as a template for other dental specialities or clinical fields.

Any research methodology has its limitations. Since this study only reflects the perceptions and the experiences of the clinicians and faculty team members in the field of prosthodontic research, it may not be generalizable and applicable to many other disciplines without additional refinement. In terms of the implementation, we could anticipate barriers for various reasons such as the students' and clinicians' resistance toward complexity of the design, lack of knowledge about the concept, and the deficient infrastructure. However, we believe that once the clinicians and students become familiar with the new prosthodontic record and receive appropriate support and training, these barriers could be resolved.[3] This phase should include post-implementation surveys and interviews with dental students, clinical instructors, and faculty members to evaluate the feasibility and efficacy of this patient record in the clinical setting. Then, the research cycle may start to find solutions for any potential barriers. Finally, evaluation studies should be conducted to assess the long-term impact of this record on clinical, educational, and research capacities.

CONCLUSION

This study is a beginning effort to develop an evidence/research-based patient record in the field of removable prosthodontics. The study shows how action research can be useful in this process and demonstrates that academic educators are well placed to conduct such research. Developing a prosthodontic patient record has several advantages, such as monitoring prosthodontic care, collecting a large amount of valid data, and facilitating clinical research and clinical audit in the university-based setting.

REFERENCES

1. Jaeger AJ, Sandmann LR, Kim J. Advising Graduate Students Doing Community-Engaged Dissertation Research: The Advisor-Advisee Relationship Advising Graduate Students Doing Community-Engaged Dissertation Research: The Advisor-Advisee Relationship. JHEOE 2011;15(4):5-26.
2. Stark PC, Kalenderian E, White JM, et al. Consortium for oral health-related informatics: improving dental research, education, and treatment. J Dent Educ 2010;74(10):1051-65.
3. Birch D, Park A, Bailey M, et al. The development and implementation of a computerized database for clinical research in minimal access surgery. Surg Endosc 2001;15(9):1008-10.
4. Black N. High-quality clinical databases: breaking down barriers. Lancet 1999;353(9160):1205-6.
5. Stow P, Hart G, Higlett T, et al. Development and implementation of a high-quality clinical database: the Australian and New Zealand Intensive Care Society Adult Patient Database. J Crit Care 2006;21(2):133-41.
6. Richesson R, Krischer J. Data standards in clinical research: gaps, overlaps, challenges and future directions. J Am Med Inform Assoc 2007;14(6):687-96.
7. Parkin C, Bullock I. Evidence-based health care: development and audit of a clinical standard for research and its impact on an NHS trust. J Clin Nurs 2005;14(4):418-25.
8. Mackay J. Review of the Findings of Some Homicide Mental Health Inquiries Since 1994. Ment Health Rev J 2004;9(2):28-30.
9. Osborne CE, Thompson HC. Criteria for evaluation of ambulatory child health care by chart audit: development and testing of a methodology. Final report of the Joint Committee on Quality Assurance of Ambulatory Health Care for Children and Youth. Pediatrics 1975;56(4 PT 2 SUPPL):625-92.
10. Pessian F, Beckett HA. Record keeping by undergraduate dental students: a clinical audit. Br Dent J 2004;197(11):703-5.
11. Morgan RG. Quality evaluation of clinical records of a group of general dental practitioners entering a quality assurance programme. Br Dent J 2001;191(8):436-41.
12. Osborn JB, Stoltenberg JL, Newell KJ, Osborn SC. Adequacy of dental records in clinical practice: a survey of dentists. J Dent Hyg 2000;74(4):297-306.
13. Cole A, McMichael A. Audit of dental practice record-keeping: a PCT-coordinated clinical audit by Worcestershire dentists. Prim Dent Care 2009;16(3):85-93.
14. Richmond R, Pretty IA. Antemortem records of forensic significance among edentulous individuals. J Forensic Sci 2007;52(2):423-7.

15. Helminen S, Vehkalahti M, Murtomaa H, Kekki P, Ketomäki T. Quality evaluation of oral health record-keeping for Finnish young adults. Acta Odontol Scand 1998;56(5):288-92.
16. Ireland R, Harris R, Pealing R. Clinical record keeping by general dental practitioners piloting the Denplan'Excel'accreditation programme. Br Dent J 2001;191(5):260.
17. Mann R, Williams J. Standards in medical record keeping. Clin Med 2003;3(4):329-32.
18. Osborn JB, Stoltenberg JL, Newell KJ, Osborn SC. Adequacy of dental records in clinical practice: a survey of dentists. J Dent Hyg 2000;74(4):297-306.
19. Tang PC, Fafchamps D, Shortliffe EH. Traditional medical records as a source of clinical data in the outpatient setting. Proc Annu Symp Comput Appl Med Care 1994:575-9.
20. Carpenter I, Ram MB, Croft GP, Williams JG. Medical records and record-keeping standards. Clin Med 2007;7(4):328-31.
21. Hogan W, Wagner M. Accuracy of data in computer-based patient records. J Am Med Inform Assoc 1997;4(5):342.
22. Rios Santos JV, Martin Garcia P, Segura Egea JJ, Fernandez-Palacin A, Bullon Fernandez P. Audit of dental reports (II): first Phase-II study in a Spanish Faculty of Dentistry. Med Oral Patol Oral Cir Bucal 2008;13(8):E529-35.
23. Hall BL. Participatory research, popular knowledge and power: A personal reflection. Convergence 1981;14(3):6-19.
24. Kindon S, Pain R, Kesby M. Reflection. In: Kindon S, Pain R, Kesby M, editors. Participatory action research approaches and methods: connecting people, participation and place. Abingdon, Oxfordshire, UK: Routledge; 2007. p. 7-20.
25. Koch T, Kralik D. The participatory action research process in practice. In: Koch T, Kralik D, editors. Participatory action research in health care. Chichester: Wiley-Blackwell; 2006. p. 41-64.
26. Holter I, Schwartz-Barcott D. Action research: what is it? How has it been used and how can it be used in nursing? Journal Adv Nurs 1993;18(2):298-304.
27. Elliot J. Action research in policy contexts. In: Elliot J, editor. Action research for educational change. Milton Keynes, Eng: Keynes:Open University Press; 1991. p. 43-69.
28. Glasson J, Chang E, Chenoweth L, et al. Evaluation of a model of nursing care for older patients using participatory action research in an acute medical ward. J Clin Nurs 2006;15(5):588-98.
29. Cammarota J, Fine M. different eyes/open eyes , community based participatory action research. In: Cammarota J, Fine M, editors. Revolutionizing education: Youth participatory action research in motion. New York: Routledge 2008. p. 97-99.

30. Wadsworth Y. A conceptual framework. In: Wadsworth Y, editor. Everyday Evaluation on the Run. 3rd ed. Walnut Creek, CA: Left Coast Press Inc; 2011. p. 15-54.
31. Avison DE, Lau F, Myers MD, Nielsen PA. Action research. Commun ACM 1999;42(1):94-97.
32. Meyer J. Action research In: Pope C, Mays N, editors. Qualitative research in health care. 3rd ed. Malden, Massachusetts: Blackwell Pub./BMJ Books 2006. p. 121-32.
33. Meyer J. Qualitative research in health care. Using qualitative methods in health related action research. BMJ 2000;320(7228):178-81.
34. Bedos C, Loignon C, Levine A. Qualitative research. In: Lesaffre E, Feine J, Leroux B, Declerck D, editors. Statistical and methodological aspects of oral health research. 1 ed: New York: Wiley-Blackwell; 2009. p. 113–30.
35. Patton MQ. Designing Qulitative Studies. In: Patton MQ, editor. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2002. p. 230-46.
36. Patton MQ. Qualitative Interviewing. In: Patton MQ, editor. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2002. p. 341-47.
37. Morgan D, Krueger R, King J. Recruiting the Participants. In: Morgan D, Krueger R, King J, editors. Focus Group Kit: Planning focus groups. Thousand Oaks, Calif: Sage publication; 1998. p. 85-121.
38. Ribeiro AB, Ahmadi M, Souza RF, Emami E. Focusing on outcomes in removable prosthodontics: A systematic review. J Dent Res 91(Spec Iss A): #162878 2012.
39. Patton MQ. Enhancing the Quality and Credibility of Qualitative Analysis. In: Patton MQ, editor. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2002. p. 555-88.
40. Richardson L, St. Pierre EA. Writing: a Method of Inquiry. In: Denzin NK, Lincoln YS, editors. Collecting and interpreting qualitative materials. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2007. p. 478-81.
41. Lincoln YS, Guba EG. Estabilishing Trustworthiness. In: Lincoln YS, Guba EG, editors. Naturalistic inquiry. Newbury Park, California: Sage Publications, Inc; 1985. p. 289-332.
42. Marshall C, Rossman GB. Trustworthiness and Ethics. In: Marshall C, Rossman GB, editors. Designing qualitative research. 5th ed. Thousand Oaks, Calif: Sage Publications, Inc; 2010. p. 39-44.
43. Patton MQ. Qualitative Analysis and Interpretation. In: Patton MQ, editor. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2002 p. 452-53.
44. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol 2006;3(2):77-101.

45. Boyatzis RE. Developing Themes and Codes In: Boyatzis RE, editor. Transforming qualitative information: Thematic analysis and code development. Thousand Oaks, California: Sage Publications, Inc; 1998. p. 29-54.
46. Shenton AK. Strategies for ensuring trustworthiness in qualitative research projects. Education for Information 2004;22(2):63-76.
47. Sacristan JA. Exploratory trials, confirmatory observations: a new reasoning model in the era of patient-centered medicine. BMC Med Res Methodol 2011;11:57.
48. Allison PJ, Bedos C. Canadian dentists' view of the utility and accessibility of dental research. J Dent Educ 2003;67(5):533-41.
49. Baum BJ, Scott J, Bickel M, et al. 5.3 Global challenges in research and strategic planning. Eur J Dent Educ 2002;6 Suppl 3:179-84.
50. Brodin P, Bennett I, Appleton J, et al. 3.2 Ensuring research productivity in the future faculty. Eur J Dent Educ 2002;6 Suppl 3:97-106.
51. DePaola DP. The revitalization of U.S. dental education. J Dent Educ 2008;72(2 Suppl):28-42.
52. Evidence-based health care: a new approach to teaching the practice of health care. Evidence-Based Medicine Working Group. J Dent Educ 1994;58(8):648-53.
53. Ismail AI, Bader JD. Evidence-based dentistry in clinical practice. J Am Dent Assoc 2004;135(1):78.
54. Chapnick L, Chapnick A. The part-time clinical instructor in the undergraduate dental clinic. J Can Dent Assoc 1998;64(5):374-6.
55. McGarry TJ, Nimmo A, Skiba JF, et al. Classification system for complete edentulism. The American College of Prosthodontics. J Prosthodont 1999;8(1):27-39.
56. McGarry TJ, Nimmo A, Skiba JF, et al. Classification system for partial edentulism. J Prosthodont 2002;11(3):181-93.
57. Hand J, Reynolds W. Dental record documentation in selected ambulatory care facilities. Public Health Rep 1984;99(6):583.
58. Susman GI. Action Research: A Sociotechnical Systems Perspective. Newbury Park: Sage Publications; 1983.

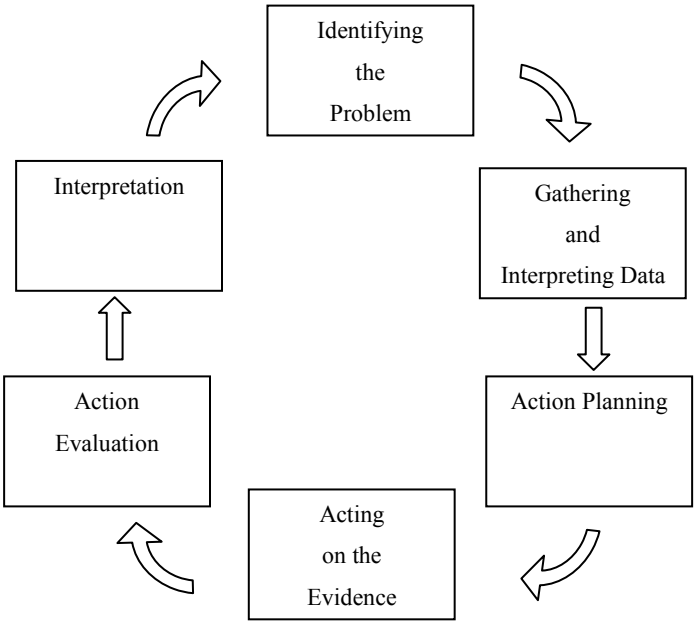


Figure 1: Action research cycle model (adapted from Susman1983)[58]

Table 1. Characteristics of study participants (N=14)

Participants	**Numbers**
Gender	
Male	**9**
Female	**5**
Academic Status	
Full-time professor	**5**
Part-time clinician	**9**
Age	
30-40 years	**4**
41-50 years	**6**
51+ years	**4**
Teaching Experience	
10 years	**1**
10-20 years	**4**
21 - 30 years	**6**
31≥ years	**3**

CHAPTER IV

DISCUSSION AND DIRECTIONS FOR FUTURE RESEARCH

The measurement of oral health outcomes in clinical settings relies on the maintenance of an accurate and valid clinical record. This action research study started by identifying the limitations and deficiencies of the existing prosthodontic patient record in the field of removable prosthodontics at the undergraduate clinic of Université de Montréal. Through the research cycle and active participation of faculty members and clinicians, ideas for the improvement and design of an innovative research-based patient record system arose. Finally, an evidence-based patient record was tailored and driven by clinicians and faculty members. This study is significant because of its evidence-based nature and its action research design that empowers clinical researchers and clinicians to recognize clinical, educational, and research deficits in the patient record system and helps them to meet their needs. In this chapter, we will briefly discuss this project.

5.1. THE CHOICE OF STUDY DESIGN

In this study, a qualitative approach and an action research method were selected as the study design. In general, there are three research approaches in the field of health and oral health science: quantitative, qualitative, and mixed methods [131]. A researcher's choice of measurement approach depends on several factors, including experience and personal training of the researcher, the audience, the type of outcome, and most importantly, the research question [131, 132].

Nowadays, qualitative research approach has found its place within dentistry by generating new hypotheses and providing important information to answer questions, that cannot be found using quantitative techniques [110, 132-136]. For example, programs, services, and dental treatments could be all examined by qualitative methods [137, 138].

Action research was introduced by psychologist Kurt Lewin in the mid 1940s [106, 139-141]. He described action research as "proceeding in a spiral of steps, each of which is

composed of planning, action and the evaluation of the result of action" [142-145]. In contrast to traditional dental research which is validated by statistical presentation, action research uses a qualitative process (e.g., interview, focus group discussion, etc.) and qualitative analysis to identify what people really think, believe, and do [146]. According to Bell (1999), action research is a useful research approach for clinical scientists who have identified a problem during the course of their practice and who would like to find solutions to improve their practice [113].

As the goal of our study was an "action" (developing a new prosthodontic patient record), the information gathered within the research cycle helped us in decision making about goals and objectives for the desired record. Furthermore, this research methodology will facilitate the transfer of this research to the clinic because clinicians formed part of the research team rather than being the tools of an outside researcher. They will continue to collaborate to implement and evaluate the study results, since they are responsible and self-decision-makers [147, 148].

The action research method has been widely used in the field of oral health. Drewry and Chu (1995) conducted an action research project to gather information on issues related to dental care access [146]. Reeson and Jepson (2005) used action research to improve collaboration and communication between dental undergraduates and dental technicians to increase the quality of dental care for patients in removable prosthodontics [113].

In this study, the focus groups and interviews were used to capture opinions from the professors. The important advantages of the methods used include capturing data that may be difficult to understand as opinions and beliefs, and helping to generate a wide range of information and innovative ideas by creating synergy between the participants. In addition, in the focus group, the interviewees discuss the issues at the same time. Thus, data

collection is less time consuming and the process helps participants to be more comfortable to express their beliefs [117, 149, 150].

5.2. THE CHOICE OF STUDY SETTING

This study was conducted in a university-based setting because of the important role of universities and educators in translating research and research findings into dental education. Promoting and strengthening research skills in clinicians and students, as well as training them how to apply this new knowledge to their practices are considered to be the main roles of dental schools and their faculty members [151]. Furthermore, the students should be able to perform evidence-based clinical decision-making, which has important impact on the practice of dentistry [152, 153]. They should also learn to the importance of having a documentation record that allows patient treatment follow-up. Therefore, this study will help to implement new learning strategies in the dental education setting. This will increase the ability for scientific thinking among dental students [154, 155].

5.3 THE CHOICE OF STUDY TEAM MEMBERS AND PARTICIPANTS

The use of purposeful sample strategies to select the team members and interviewees allowed us not only to collect information-rich data but also ensured variation in the views expressed. The active involvement of researchers, academic clinicians, and clinical instructors in this study served several critical functions:

1) Following the action research cycle, the research team members have accumulated considerable knowledge about how the idea for the new dental record emerged and how it was developed. They have also gained considerable knowledge in teaching and explication of the new concept to students.

2) The research team members validated that the new dental record is implementable and created value for it.

3) These educators will play an active role in the implementation process of the study results in the clinic.

5.4. STUDY OBJECTIVES AND FINDINGS

Nowadays it is recognized that dentistry, like other health-care fields, requires integrating the concept of evidence-based health. However, there still exist challenges in how to bridge research and dental practice. Research education could be a solution to this dilemma. In this regard, many dental schools have implemented an educational approach that helps promote evidence-based thinking in the context of clinical training [151, 156]. This approach allows behavioral changes in the students and clinicians and increases their willingness to support and invest in evidence-based health care. This would help future dentists to use research evidence to offer the optimal care for their patients [157, 158].

One of the tools of this approach is to build the base of research knowledge and to provide instructional content and methodology by standardizing the medical and dental health recording system and facilitating the exchange of information. As an example, the Consortium for Oral Health-Related Informatics (COHRI) [51] is the result of collaboration of 20 dental schools to develop a monograph that could serve as a guide in the acquisition of an oral health information system. The COHRI provides standardized data for diverse clinical research studies by assembling the largest oral health database ever created. It also allows measuring student clinical performance, determining the accuracy of treatment planning, and validating educational outcomes [51]. Similarly, some initiatives have been undertaken to improve the prosthodontic clinical recording system. For example, the American College of Prosthodontists has developed a classification system to provide a framework for the organization of clinical observations in removable prosthodontic. This framework has potential benefits including: improving professional communication, increasing diagnostic and treatment stability, and standardizing criteria for outcomes assessment and research [159, 160].

Based on this concept, the main aim of this action research project was to create an evidence-based recording system, to increase research and educational capacities as well as to improve treatment outcomes in the undergraduate removable prosthodontic clinic.

During the research action cycles, the professors expressed their perceptions about the limitations, weaknesses, and strengths of the current prosthodontic record. In addition, the participants were asked about their suggestions to realize a comprehensible and feasible evidence-based clinical record.

The study results indicated that the research team had the desire to develop a clinical tool that could respond to clinical, educational, and research needs. Accordingly, the research team members expressed the need for a practical clinical guide for oral examination, diagnosis, and treatment decision making, which will improve oral health outcomes for patients and will enhance clinical audit. Furthermore, this tool should simplify the collection and retrieval of clinical parameters for research.

In addition, the research team expressed their belief that this approach could create a research training environment for clinicians and dental students and will introduce an evidence-based approach. The focus group discussions and interviews with study participants allowed reflection on the effectiveness and design of this new tool. This precious and rich information was then translated into the action planning phase.

Our findings showed that the current format was solely clinical and it has not been designed to address research needs. In addition, the acquisition of clinical information was judged by the experts in the field to be incomplete and outdated. Thus, redesigning a new format to overcome these weaknesses and limitations was found to be necessary.

However, the research team members were concerned about conditions leading to unsuccessful implementations of the new model, and gave insights about the conditions for

success, as well as for failure. The full-time professors mentioned that the part-time dental instructors are important in succeeding or failing of the implementation of the new record in the clinic, therefore it would be essential to ascertain their perceptions of the process and their willingness to adapt to these new changes [153]. In this regard, the interview results with both full-time and part-time professors demonstrated that there exists diversity between the opinions of the full-time professors and those of part-time clinical instructors in regard to the formatting of the prosthodontic clinical record. The full-time professors expressed that the new clinical form should not only provide interesting research elements, but also it should simultaneously respond to clinical needs. However, a number of clinical instructors insisted that the present form is adequately precise and a useful tool for clinical examination. Many believed that the new form will be a time-consuming task. For that reason they preferred a brief dental record form with simplified presentation, which would facilitate clinical examination without putting a burden on them and on students. This diversity could be explained by the fact that the professors have different obligations and needs based on their career profile. All tenure-track faculty members are expected to perform research activities to achieve their tenure. By contrast, clinical instructors do not have research responsibility and do not generally perform independent research. Furthermore, their training and education is mostly limited to the undergraduate level and they don't receive formal training in education. According to L. Chapnick and A. Chapnick (1998), part-time dental instructors have the greatest effectiveness while acting as a facilitators rather than educators [161].

In order to overcome the above mentioned barriers, the following possible strategies could be considered. A close communication between clinical researchers and clinical instructors should be encouraged. Additionally, continuing education and workshops led by academic professors for the clinicians would be helpful. Such a close communication would also assist to deliver more high-quality and evidence-based care to the patients [151].

The systematic literature review in this project helped to identify the most important treatment outcomes of interest in removable prosthodontics research and to assess their evolution and their quality over time. The study results indicated that many current studies of prosthodontic treatment use patient-based outcomes and that there has been a significant increase in the selection of patient-based outcomes in each 10-year time interval since 1990 [162] . This could be explained by the fact that although in prosthodontics technical skills are extremely important, they are not the main predictors of patient satisfaction with treatment. So, the use of patient-based measurement instruments has increased over the last decades. These tools make it possible to measure the social, psychological, and physical impacts of oral diseases and their associated treatments [132]. Thus, in the design of the prosthodontic dental record, we considered patient-reported outcomes as well as clinically measured objective outcomes.

The newly designed clinical record is made of three parts. The first will allow the assessment of risk factors. These include assessment of sociodemographic characteristics, medical and dental history, life style habits, dental service use, oral hygiene habits, dental anxiety, and psychological characteristics (Appendix I). The second part consists of the oral clinical examination form and the assessment of disease-oriented outcomes such as caries, periodontal diseases, denture stomatitis, and alveolar bone resorption (Appendices II and III). Finally, the third part includes assessment of patient-oriented outcomes such as oral health quality of life, patient satisfaction, and dental visit satisfaction (Appendix IV).

Although the development of the new prosthodontic records with clinical, educational, and research characteristics was successful and feasible, we believe that to ensure a balance in education, clinical care, and research productivity within faculties, we have to recognize and resolve fundamental problems. The fact that dental research is a prerequisite for dental education should be integrated into the curriculum of the dental education setting for undergraduate students. Dental schools should inform dental students

about the importance of research that can be incorporated into the process of clinical decision making [151]. In this way, dental schools will develop reflective and technically capable practitioners in the future [154, 156]. Furthermore the faculty should create favorable research milieus by allocating resources such as sufficient scientific faculty and research infrastructure.

5.5. STUDY RELEVANCE AND PRACTICAL IMPLICATIONS

To the best of our knowledge, this study is among the first to create a prosthodontic evidence-based recording system in a dental academic institution. Development of a standardized dental record that integrates patient dental care data with clinical research data is a high priority in clinical research. The process of collecting prospective clinical data is laborious, time consuming, and expensive. The implementation of this new clinical prosthodontic record will allow powerful data queries on a large patient databank, with relatively low cost and without information and measurement bias [2].

Furthermore, using this record in the undergraduate clinic will enable dental students to improve their clinical and research knowledge. Importantly, we will raise research awareness and the essential basic of education [2]. In addition, this newly designed record will help to maintain high standards of record-keeping, which is a necessary part of quality dental care [64]. Although this new prosthodontic record is designed for the removable prosthodontic clinic, it can also be used as a template for other dental departments within the Université de Montréal as well as other universities.

5.6. STUDY LIMITATIONS

Qualitative research, like other research methods, has particular criteria to be valid and reliable. According to Lincoln and Guba (1985), these criteria include credibility (vs.

internal validity) and transferability (vs. external validity) [126]. Furthermore, when the results are trustworthy and believable for research participants and readers, credibility in qualitative research is obtained.

In this study we attempted to increase study validity through means such as triangulation (using different data sources, methods of data collection, and different team members to compare the results), precise coding of data, checking the interpretations of collected data with the participants, and controlling the effects of the interaction between the research team and the study participants [117, 130]. However, in focus groups it is likely that the whole discussion may be dominated by a few individuals. Thus, this can result in inaccurate and biased results [163].

Transferability refers to the extent that the research result can be applied to the other settings or groups [164]. The procedure to increase transferability in qualitative research includes: enough reporting of the sampling strategy, the methods, and the results in order to allow others to reproduce the study in a similar or different setting [117, 130].

Since, this study only reflects the perceptions and the experiences of the clinicians and faculty team members in the field of prosthodontic research, it may not be generalizable and applicable to many other disciplines without additional refinement.

In terms of implementation, we could expect barriers such as students' and clinicians' resistance toward complexity of the design, lack of knowledge about the concept, and the existing infrastructure. However, believe that once the clinicians and students become familiar with the new prosthodontic record and receive appropriate feedback, these blocking limits will be resolved.

5.7. FUTURE RESEARCH

At this stage of the action research cycle, the new designed prosthodontic record is at an early, crude form. The implementation phase should be piloted in an academic session in the undergraduate clinic. This phase should include post-implementation surveys and interviews with dental students, clinical instructors, and faculty members to evaluate the feasibility and efficacy of this patient record in the clinical setting. Then, the research cycle may start to find solutions for any potential barriers. Finally, evaluation studies should be conducted to assess the long-term impact of this record on clinical, educational, and research capacities.

CHAPTER V

CONCLUSIONS

The results of this action research study suggest that:

1. To ensure the translation of the research into clinical training, the teamwork of clinical researchers and clinicians is essential.
2. Action research is a useful and feasible research method in the university setting. Through this method, we have developed a new patient dental care record that reflects the needs of those who are interested in removable prosthodontic research, training, and practice.
3. Applying an evidence-based approach in the patient clinical record systems in the field of removable prosthodontics is practical and has real potential.
4. A prosthodontic clinical record should respond to both educational and research objectives while improving the quality of care for patients.
5. Clinicians and students should be informed, educated, and motivated to assure the successful implementation of this new prosthodontic patient record.

BIBLIOGRAPHY

1. Richesson R, Krischer J. *Data standards in clinical research: gaps, overlaps, challenges and future directions*. Journal of the American Medical Informatics Association 2007;14(6):687-96.
2. Parkin C, Bullock I. *Evidence-based health care: development and audit of a clinical standard for research and its impact on an NHS trust*. Journal of Clinical Nursing 2005;14(4):418-25.
3. Tang PC, Fafchamps D, et al. *Traditional medical records as a source of clinical data in the outpatient setting*. Proceedings / the ... Annual Symposium on Computer Application [sic] in Medical Care. 1994:575-9.
4. Mann R, Williams J. *Standards in medical record keeping*. Clinical Medicine, Journal of the Royal College of Physicians 2003;3(4):329-32.
5. Osborn JB, Stoltenberg JL, et al. *Adequacy of dental records in clinical practice: a survey of dentists*. Journal of dental hygiene : JDH / American Dental Hygienists' Association. 2000;74(4):297-306.
6. Osborne CE, Thompson HC. *Criteria for evaluation of ambulatory child health care by chart audit: development and testing of a methodology. Final report of the Joint Committee on Quality Assurance of Ambulatory Health Care for Children and Youth*. Pediatrics 1975;56(4 PT 2 SUPPL):625-92.
7. Birch D, Park A, et al. *The development and implementation of a computerized database for clinical research in minimal access surgery*. Surgical Endoscopy 2001;15(9):1008-10.
8. Black N. *High-quality clinical databases: breaking down barriers*. Lancet 1999;353(9160):1205-6.
9. Stow P, Hart G, et al. *Development and implementation of a high-quality clinical database: the Australian and New Zealand Intensive Care Society Adult Patient Database*. Journal of Critical Care 2006;21(2):133-41.
10. Pryor DB, Califf RM, et al. *Clinical data bases: accomplishments and unrealized potential*. Medical Care 1985;23(5):623-47.
11. Pullen I, Loudon J. *Improving standards in clinical record-keeping*. Advances in Psychiatric Treatment 2006;12(4):280.
12. Wyatt JC, Wright P. *Design should help use of patients' data*. Lancet 1998;352(9137):1375-8.
13. Lawney M. *For the record. Understanding patient recordkeeping*. The New York State Dental Journal 1998;61(6):40.
14. Online Computer Dictionary for Computer and Internet *Webopedia*. "http://www.webopedia.com/TERM/D/database.html". 10 Decembre 2011.
15. Carpenter I, Ram MB, et al. *Medical records and record-keeping standards*. Clinical Medicine : Journal of the Royal College of Physicians of London 2007;7(4):328-31.

16. Pryor DB, Stead WW, et al. *Features of TMR for a successful clinical and research database*. Paper presented at, 1982 November 2: 79–84.
17. Van der Lei J. *Information and communication technology in health care: do we need feedback?* International Journal of Medical Informatics 2002;66(1-3):75-83.
18. Jha AK, DesRoches CM, et al. *Use of electronic health records in U.S. hospitals*. The New England Journal of Medicine 2009;360(16):1628-38.
19. Gunter TD, Terry NP. *The emergence of national electronic health record architectures in the United States and Australia: models, costs, and questions*. Journal of Medical Internet Research 2005;7(1):e3.
20. Bleich HL, Slack WV. *Reflections on electronic medical records: when doctors will use them and when they will not*. International Journal of Medical Informatics 2010;79(1):1-4.
21. Williams T, Samarth A. *Health Information Technology Basics*. In: Williams T, Samarth A, editors. Electronic Health Records for Dummies. Toronto: John Wiley & Sons; 2010. p. 7-45.
22. Rambir S, Nagori BP, et al. *A review: Clinical trial and data management*. Pharmacophore; 2011;2 (3). p. 200-09.
23. Kurland LT, Molgaard CA. *The patient record in epidemiology*. Scientific American 1981;245(4):54-63.
24. Wyatt JC. *Clinical data systems, Part 1: Data and medical records*. Lancet 1994;344(8936):1543-7.
25. Cook SF, Visscher WA, et al. *Project IMPACT: results from a pilot validity study of a new observational database*. Critical Care Medicine 2002;30(12):2765.
26. Leiner F, Reinhold H, et al. *What Is Medical Documentation About?* In: Leiner F, Reinhold H, Wilhelm G, Petra K-G, editors. Medical data management: a practical guide. 3rd ed. New York: Springer Verlag, Inc; 2003. p. 1-6.
27. Leiner F, Reinhold H, et al. *Utilization of Clinical Data Management Systems.* In: Leiner F RH, Wilhelm G, Petra K-G, editor. Medical data management: a practical guide. 3rd ed. New York: Springer Verlag, Inc; 2003. p. 75-82.
28. Haux R, Knaup P, et al. *On educating about medical data management - the other side of the electronic health record*. Methods of Information in Medicine 2007;46(1):74-9.
29. De Lusignan S, Van Weel C. *The use of routinely collected computer data for research in primary care: opportunities and challenges*. Family Practice 2006;23(2):253.
30. Schoenberg BS, Kokmen E, et al. *Alzheimer's disease and other dementing illnesses in a defined United States population: incidence rates and clinical features*. Annals of Neurology 1987;22(6):724-9.
31. Melton LJ, 3rd. *History of the Rochester Epidemiology Project*. Mayo Clinic Proceedings 1996;71(3):266-74.
32. Bower JH, Maraganore DM, et al. *Incidence and distribution of parkinsonism in Olmsted County, Minnesota, 1976-1990*. Neurology 1999;52(6):1214-20.

33. Lu Z, Su J. *Clinical data management: Current status, challenges, and future directions from industry perspectives*. Open Access Journal of Clinical Trials 2010;2:93-105.
34. Van der Meijden M, Tange H, et al. *An experimental electronic patient record for stroke patients. Part 2: system description*. International Journal of Medical Informatics 2000;58:127-40.
35. Wilner DM, Greathouse VL, et al. *Inside DOPE The custom research databank in the analysis and transfer of information*. Evaluation 1976;3(1-2):11-14.
36. Britton A, McKee M, et al. *Choosing between randomised and non-randomised studies: a systemic review*. Health Technology Assessment 1998;2:1-124.
37. Harrell FE Jr, Califf RM, et al. *Evaluating the yield of medical tests*. JAMA : The Journal of the American Medical Association 1982;247(18):2543-6.
38. Leiner F, Reinhold H, et al. *Data Management in Clinical Studies.* In: Leiner F RH, Wilhelm G, Petra K-G, editor. Medical data management: a practical guide. 3rd ed. New York: Springer Verlag, Inc; 2003. p. 117-19.
39. Clancy CM, Eisenberg JM. *Outcomes research: measuring the end results of health care*. Science 1998;282(5387):245-6.
40. Ellwood PM. *Outcomes management*. New England Journal of Medicine 1988;318(23):1549-56.
41. Schwartz JS, Lurie N. *Assessment of medical outcomes. New opportunities for achieving a long sought-after objective*. International Journal of Technology Assessment in Health Care 1990;6(2):333-9.
42. Arts DG, De Keizer NF, et al. *Defining and improving data quality in medical registries: a literature review, case study, and generic framework*. Journal of the American Medical Informatics Association : JAMIA 2002;9(6):600-11.
43. Black N, Payne M. *Directory of clinical databases: improving and promoting their use*. Quality & Safety In Health Care 2003;12(5):348-52.
44. Menon D, Marshall D. *The internationalization of health technology assessment*. International Journal of Technology Assessment in Health Care 1996;12(1):45-51.
45. Fernandez AM, Schrogie JJ, et al. *Technology assessment in healthcare: a review and description of a "best practice" technology assessment process*. Best Practices and Benchmarking in Healthcare : A Practical Journal for Cinical and Management Application 1997;2(6):240-53.
46. Fineberg H. *Evaluation of computed tomography: achievement and challenge*. AJR. American Journal of Roentgenology 1978;131(1).
47. De Lusignan S, Hague N, et al. *Routinely-collected general practice data are complex, but with systematic processing can be used for quality improvement and research*. Informatics in Primary Care 2006;14(1):59-66.
48. Leclercq MH, Barmes DE, et al. *Oral health: global trends and projections*. World Health Statistics Quarterly 1987;40:116-20.
49. Nithila A, Bourgeois D, et al. *WHO Global Oral Data Bank, 1986-96: an overview of oral health surveys at 12 years of age*. Bull World Health Organ 1998;76(3):237-44.

50. Leopold CT, Mander C, et al. *The World Health Organization goals for oral health: a progress report*. Community Dental Health 1991;8(3):245–51.
51. Stark PC, Kalenderian E, et al. *Consortium for oral health-related informatics: improving dental research, education, and treatment*. Journal of Dental Education 2010;74(10):1051-65.
52. The Hospital Morbidity Database *HMDB*. "http://www.cihi.ca/CIHI-ext-portal/internet/en/document/types+of+care/hospital+care/acute+care/services_hmdb ". 20 December 2011.
53. The General Practice Research Database *GPRD*. "http://www.gprd.com ". 18 December 2011.
54. Wong IC, Murray ML. *The potential of UK clinical databases in enhancing paediatric medication research*. British Journal of Clinical Pharmacology 2005;59(6):750-5.
55. Starmer CF, Lee KL, et al. *On the complexity of investigating chronic illness*. Biometrics 1980;36(2):333-35.
56. Pryor DB, Harrell Jr FE, et al. *Estimating the likelihood of significant coronary artery disease*. The American Journal of Medicine 1983;75(5):771-80.
57. Califf RM, McKinnis RA, et al. *Prognostic value of ventricular arrhythmias associated with treadmill exercise testing in patients studied with cardiac catheterization for suspected ischemic heart disease*. Journal of the American College of Cardiology 1983;2(6):1060-7.
58. Rosati RA, Lee KL, et al. *Problems and advantages of an observational data base approach to evaluating the effect of therapy on outcome*. Circulation 1982;65(7 Pt 2):27-32.
59. Rosati RA, Wallace AG, et al. *The way of the future*. Archives of Internal Medicine 1973;131(2):285-87.
60. Laszlo J, Feigl P. *Utilization of the Centralized Cancer Patient Data System*. Progress in Clinical and Biological Research 1981;57:31-49.
61. Laszlo J, Lenhard R, et al. *A profile of treatment approaches used at comprehensive cancer centers*. Journal of Chronic Diseases 1982;35(11):853-9.
62. Feigl P, Breslow NE, et al. *U.S. centralized cancer patient data system for uniform communication among cancer centers*. Journal of the National Cancer Institute. 1981;67(5):1017-24.
63. Laszlo J. *Two long-range clinical data bases are terminated: bang, whimper, or ripple?* Journal of Clinical Oncology : Official Journal of the American Society of Clinical Oncology 1984;2(5):532-3.
64. Hand J, Reynolds W. *Dental record documentation in selected ambulatory care facilities*. Public Health Reports 1984;99(6):583.
65. Goldhill DR, Sumner A. *APACHE II, data accuracy and outcome prediction*. Anaesthesia 1998;53(10):937-43.
66. Lorenzoni L, Da Cas R, et al. *The quality of abstracting medical information from the medical record: the impact of training programmes*. International Journal for

Quality in Health Care : Journal of the International Society for Quality in Health Care / ISQua 1999;11(3):209-13.
67. Seddon DJ, Williams EM. *Data quality in population-based cancer registration: an assessment of the Merseyside and Cheshire Cancer Registry*. British Journal of Cancer 1997;76(5):667-74.
68. Barrie JL, Marsh DR. *Quality of data in the Manchester orthopaedic database*. BMJ : British Medical Journal / British Medical Association 1992;304(6820):159-62.
69. Abate M DK, Allen H. *A hierarchical approach to improving data quality.* Data Quality Journal 1998;4(1):365–9.
70. Maudsley G, Williams EM. *What lessons can be learned for cancer registration quality assurance from data users? Skin cancer as an example*. International Journal of Epidemiology 1999;28(5):809-15.
71. Wyatt J. *Acquisition and use of clinical data for audit and research*. Journal of Evaluation in Clinical Practice 1995;1(1):15–27.
72. Teperi J. *Multi method approach to the assessment of data quality in the Finnish Medical Birth Registry*. Journal of Epidemiology and Community Health 1993;47(3):242-7.
73. Wyatt J, Sullivan F. *What is health information?* British Medical Journal 2005;331(7516):566-8.
74. Lawney M. *For the record. Understanding patient recordkeeping*. The New York State Dental JournaL 1998;64(5):34-43.
75. American Dental Association *ADA Principles of Ethics and Code of Professional Conduct, Council on Ethics, Bylaws and Judicial Affairs,*. "http://www.ada.org/sections/professionalResources/pdfs/dentalpractice_dental_records.pdf". Accessed 20 December 2011.
76. Nisonson I. *Update your record-keeping skills: informed consent and refusal*. Bulletin of the American College of Surgeons. 2000;85(5):18-20.
77. Nisonson I. *The medical record*. Bulletin of the American College of Surgeons 1991;76(9):24-6.
78. Ireland R, Harris R, et al. *Clinical record keeping by general dental practitioners piloting the Denplan'Excel'accreditation programme*. British Dental Journal 2001;191(5):260.
79. Hogan W, Wagner M. *Accuracy of data in computer-based patient records*. Journal of the American Medical Informatics Association 1997;4(5):342.
80. Pessian F, Beckett HA. *Record keeping by undergraduate dental students: a clinical audit*. British Dental Journal 2004;197(11):703-5.
81. Rios Santos JV, Martin Garcia P, et al. *Audit of dental reports (II): first Phase-II study in a Spanish Faculty of Dentistry*. Medicina Oral, Patología Oral y Cirugía Bucal. 2008;13(8):E529-35.
82. Richmond R, Pretty IA. *Antemortem records of forensic significance among edentulous individuals*. Journal of Forensic Sciences 2007;52(2):423-7.

83. Helminen S, Vehkalahti M, et al. *Quality evaluation of oral health record-keeping for Finnish young adults*. Acta Odontologica Scandinavica 1998;56(5):288-92.
84. Cole A, McMichael A. *Audit of dental practice record-keeping: a PCT-coordinated clinical audit by Worcestershire dentists*. Primary Dental Care 2009;16(3):85-93.
85. Martin Garcia P, Rios Santos JV, et al. *Dental audit (I): Exact criteria of dental records; results of a Phase-III study*. Medicina Oral, Patología Oral y Cirugía Bucal. 2008;13(7):E407-13.
86. Osborn JB, Stoltenberg JL, et al. *Adequacy of dental records in clinical practice: a survey of dentists*. Journal of Dental Hygiene 2000;74(4):297-306.
87. Vlug A, Van der Lei J, et al. *Postmarketing surveillance based on electronic patient records: the IPCI project*. Methods of Information in Medicine 1999;38(4/5):339-44.
88. Morgan R. *Quality evaluation of clinical records of a group of general dental practitioners entering a quality assurance programme*. British Dental Journal 2001;191(8):436.
89. Weed LL. *Medical records that guide and teach*. The New England Journal of Medicine 1968;278(11):593-600.
90. Gagan MJ. *The SOAP format enhances communication*. Nursing New Zealand = Kai tiaki 2009;15(5):15.
91. Gouveia-Oliveira A, Lopes L. *Formal representation of a conceptual data model for the patient-based medical record*. Proceedings / the ... Annual Symposium on Computer Application [sic] in Medical Care. 1993:466-70.
92. Chasteen JE, Cameron CA, et al. *An audit system for assessing dental record keeping*. Journal of Dental Education 1996;60(12):978-86.
93. *Record keeping guidelines*. The American Psychologist 2007;62(9):993-1004.
94. Zierler-Brown S, Brown TR, et al. *Clinical documentation for patient care: models, concepts, and liability considerations for pharmacists*. American Journal of Health-System Pharmacy : AJHP : Official Journal of the American Society of Health-System Pharmacists 2007;64(17):1851-8.
95. Greenes R, Pappalardo AN, et al. *Design and implementation of a clinical data management system*. Computers and Biomedical Research 1969;2(5):469-85.
96. Prokscha S. *Elements of the process*. In: Prokscha S, editor. Practical guide to clinical data management. second ed. New York: CRC Press, Taylor & Francis Group; 2007. p. 47-113.
97. Rondel RK, Varley SA, et al. *Data capture*. In: Rondel RK, Varley SA, Webb CF, editors. Clinical data management. second ed. Chichester, West Sussex: John Wiley & Sons Ltd; 2000. p. 75-89.
98. McFadden E. *Nonautomated call-in systems*. In: McFadden E, editor. Management of data in clinical trials. second ed. New Jersey: John Wiley & Sons; 2007. p. 80-88.
99. Tai B, Seldrup J. *A review of software for data management, design and analysis of clinical trials*. Annals of the Academy of Medicine, Singapore 2000;29(5):576.

100. Greenes RA, Pappalardo AN, et al. *Design and implementation of a clinical data management system*. Computers and Biomedical Research, an International Journal 1969;2(5):469-85.
101. Mackay J. *Review of the Findings of Some Homicide Mental Health Inquiries Since 1994*. Mental Health Review Journal 2004;9(2):28-30.
102. Hall BL. *Participatory research, popular knowledge and power: A personal reflection*. Convergence: An International Journal of Adult Education 1981;14(3):6-19.
103. Patton MQ. *Designing Qualitative Studies*. In: Patton MQ, editor. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2002. p. 221-23.
104. Pahinis K, Stokes CW, et al. *Evaluating a blended-learning course taught to different groups of learners in a dental school*. Journal of Dental Education 2007;71(2):269-78.
105. Avison DE, Lau F, et al. *Action research*. Communications of the ACM 1999;42(1):94-97.
106. Kindon S, Pain R, et al. *Reflection*. In: Kindon S, Pain R, Kesby M, editors. Participatory action research approaches and methods: connecting people, participation and place. Abingdon, Oxfordshire, UK: Routledge; 2007. p. 7-20.
107. Koch T, Kralik D. *The participatory action research process in practice*. In: Koch T, Kralik D, editors. Participatory action research in health care. Chichester: Wiley-Blackwell 2006. p. 41-64.
108. Holter I, Schwartz-Barcott D. *Action research: what is it? How has it been used and how can it be used in nursing?* Journal of Advanced Nursing 1993;18(2):298-304.
109. Elliot J. *Action research in policy contexts*. In: Elliot J, editor. Action research for educational change. Milton Keynes, Eng: Keynes:Open University Press; 1991. p. 43-69.
110. Meyer J. *Action research* In: Pope C, Mays N, editors. Qualitative research in health care. 3rd ed. Malden, Massachusetts: Blackwell Pub./BMJ Books 2006. p. 121-32.
111. Glasson J, Chang E, et al. *Evaluation of a model of nursing care for older patients using participatory action research in an acute medical ward*. Journal of Clinical Nursing 2006;15(5):588-98.
112. Meyer J. *Qualitative research in health care. Using qualitative methods in health related action research*. BMJ : British Medical Journal / British Medical Association 2000;320(7228):178-81.
113. Reeson MG, Jepson NJ. *"Bridging the gap." Should the training of dental technicians be linked with that of the dental undergraduate?* British Dental Journal 2005;198(10):642-5; quiz 48.
114. Elkind A, Watts C, et al. *The use of outreach clinics for teaching undergraduate restorative dentistry*. British Dental Journal 2007;203(3):127-32.
115. Elliott J. *What have we learned from action research in school-based evaluation?* Educational Action Research 1993;1(1):175-86.

116. Susman GI. *Action Research: A Sociotechnical Systems Perspective*. Newbury Park: Sage Publications; 1983.
117. Bedos C, Loignon C, et al. *Qualitative research.* In: Lesaffre E, Feine J, Leroux B, Declerck D, editors. Statistical and methodological aspects of oral health research. 1 ed: New York: Wiley-Blackwell; 2009. p. 113–30.
118. Patton MQ. *Designing Qulitative Studies*. In: Patton MQ, editor. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2002. p. 230-46.
119. Morgan D, Krueger R, et al. *Recruiting the Participants*. In: Morgan D, Krueger R, King J, editors. Focus Group Kit: Planning focus groups. Thousand Oaks, Calif: Sage publication; 1998. p. 85-121.
120. Morgan D, Krueger R, et al. *Guiding principles of planning*. In: Morgan D, Krueger R, King J, editors. Focus Group Kit: Planning focus groups. Thousand Oaks, Calif: Sage publication; 1998. p. 3-9.
121. Bower E, Scambler S. *The contributions of qualitative research towards dental public health practice*. Community Dentistry and Oral Epidemiology 2007;35(3):161-69.
122. Patton MQ. *Qualitative Analysis and Interpretation*. In: Patton MQ, editor. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2002 p. 452-53.
123. Boyatzis RE. *Developing Themes and Codes* In: Boyatzis RE, editor. Transforming qualitative information: Thematic analysis and code development. Thousand Oaks, California: Sage Publications, Inc; 1998. p. 29-54.
124. Braun V, Clarke V. *Using thematic analysis in psychology*. Qualitative Research in Psychology 2006;3(2):77-101.
125. Richardson L, St. Pierre EA. *Writing: a Method of Inquiry*. In: Denzin NK, Lincoln YS, editors. Collecting and interpreting qualitative materials. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2007. p. 478-81.
126. Lincoln YS, Guba EG. *Estabilishing Trustworthiness*. In: Lincoln YS, Guba EG, editors. Naturalistic inquiry. Newbury Park, California: Sage Publications, Inc; 1985. p. 289-332.
127. Marshall C, Rossman GB. *Trustworthiness and Ethics*. In: Marshall C, Rossman GB, editors. Designing qualitative research. 5th ed. Thousand Oaks, Calif: Sage Publications, Inc; 2010. p. 39-44.
128. Shenton AK. *Strategies for ensuring trustworthiness in qualitative research projects*. Education for Information 2004;22(2):63-76.
129. Hanson JL, Balmer DF, et al. *Qualitative Research Methods for Medical Educators*. Academic Pediatrics 2011:380-85.
130. Patton MQ. *Enhancing the Quality and Credibility of Qualitative Analysis*. In: Patton MQ, editor. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc; 2002. p. 555-88.

131. Creswell JW. *Preliminary Considerations*. In: Creswell JW, editor. Research design: Qualitative, quantitative, and mixed methods approaches. 2th ed. Thousand Oaks, Califrnia: Sage Publications, Inc; 2009. p. 1-49.
132. Emami E, de Grandmont P, et al. *Research approaches in prosthodontics*. The European Journal of Prosthodontics and Restorative Dentistry 2008;16(4):185-9.
133. Savage J. *Ethnography and health care*. British Medical Journal 2000;321(7273):1400-2.
134. Stewart K, Gill P, et al. *Qualitative research in dentistry*. British Dental Journal 2008;204(5):235-9.
135. Dixon-Woods M, Fitzpatrick R, et al. *Including qualitative research in systematic reviews: opportunities and problems*. Journal of Evaluation in Clinical Practice 2001;7(2):125-33.
136. Meadows LM, Verdi AJ, et al. *Keeping up appearances: using qualitative research to enhance knowledge of dental practice*. Journal of Dental Education 2003;67(9):981-90.
137. Chestnutt IG, Robson KF. *Focus groups--what are they?* Dental Update. 2001;28(4):189-92.
138. Blinkhorn AS. *Qualitative research--does it have a place in dental public health?* Journal of Public Health Dentistry 2000;60(1):3-4.
139. Reason P, Bradbury H. *Handbook of Action Research: Concise paperback edition*. Los Angeles: Sage Publications Ltd; 2006.
140. Greenwood DJ, Levin M. *Introduction to action research: Social research for social change*. 2nd ed. Thousand Oaks , Calif: Sage Publications, Inc; 2007.
141. Adelman C. *Kurt Lewin and the origins of action research*. Educational Action Research 1993;1(1):7-24.
142. Stringer ET. *Act: Resolving Problems-Planning and Implementing Sustainable Soulotions*. In: Stringer ET, editor. Action research. 3rd ed. Thousand Oaks, California: Sage Publications, Inc; 2007. p. 125-35.
143. Gurung RAR, Schwartz BM. Optimizing teaching and learning: Practicing pedagogical research. Chichester, West Sussex: Wiley-Blackwell; 2011.
144. McTaggart R. *Principles for participatory action research*. Adult Education Quarterly 1991;41(3):168-87.
145. McNiff J, Whitehead J. *What do we know? The principles of action research*. In: McNiff J, Whitehead J, editors. Action research: Principles and practice. Second ed. Fetter Ln, London: Routledge; 2002. p. 13-59.
146. Drewry B, Chu R. *What do people want from dentistry? An action research approach*. Probe : the Canadian Dental Hygienists' Association Revue 1995;29(6):202-8.
147. Jasman A, Payne L, et al. *Uncovering the knowledge construction of university based teacher educators: What we learn from/with school based practitioners*. Paper presented at, 1998.
148. Day C. *Professional learning through collaborative in-service activity*. Educating Teachers: Changing the Nature of Pedagogical Knowledge 1987:207-22.

149. Krueger RA, Casey MA. *Overview of focus groups*. In: Krueger RA, Casey MA, editors. Focus groups: A practical guide for applied research. 4th ed. Thousand Oaks, CA: Sage Publications; 2009. p. 1-15.
150. Stewart DW, Shamdasani PN, et al. *Focus groups and the research toolbox*. In: Stewart DW, Shamdasani PN, Rook DW, editors. Focus groups: Theory and practice. second ed. Thousand Oaks, CA: Sage Publications; 2007. p. 41-45.
151. Baum BJ, Scott J, et al. *5.3 Global challenges in research and strategic planning*. European Journal of Dental Education : Official Journal of the Association for Dental Education in Europe 2002;6 Suppl 3:179-84.
152. DePaola DP. *The revitalization of U.S. dental education*. Journal of Dental Education 2008;72(2 Suppl):28-42.
153. Thind A, Atchison KA, et al. *Reforming dental education: faculty members' perceptions on the continuation of pipeline program changes*. Journal of Dental Education 2008;72(12):1472-80.
154. Walsh LJ, Seymour GJ. *Dental education in Queensland: II. Principles of curriculum design*. SADJ : Journal of the South African Dental Association 2001;56(3):140-6.
155. Seymour GJ, Walsh LJ. *Dental education in Queensland I: the 1-3-1 model*. SADJ : Journal of the South African Dental Association 2001;56(2):91-7.
156. Brodin P, Bennett I, et al. *3.2 Ensuring research productivity in the future faculty*. European Journal of Dental Education : Official Journal of the Association for Dental Education in Europe 2002;6 Suppl 3:97-106.
157. Ismail AI, Bader JD. *Evidence-based dentistry in clinical practice*. The Journal of the American Dental Association 2004;135(1):78.
158. *Evidence-based health care: a new approach to teaching the practice of health care. Evidence-Based Medicine Working Group*. Journal of Dental Education 1994;58(8):648-53.
159. McGarry TJ, Nimmo A, et al. *Classification system for complete edentulism. The American College of Prosthodontics*. Journal of Prosthodontics : Official Journal of the American College of Prosthodontists 1999;8(1):27-39.
160. McGarry TJ, Nimmo A, et al. *Classification system for partial edentulism.* Journal of Prosthodontics : Official Journal of the American College of Prosthodontists 2002;11(3):181-93.
161. Chapnick L, Chapnick A. *The part-time clinical instructor in the undergraduate dental clinic*. Journal - Canadian Dental Association = Journal de l'Association Dentaire Canadienne 1998;64(5):374-6.
162. Ribeiro AB, Ahmadi M, et al. *Focusing on outcomes in removable prosthodontics: A systematic review*. Journal of Dental Research 91(Spec Iss A): #162878 2012.
163. Patton MQ. *Qualitative interviewing*. In: Patton MQ, editor. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks, California: Sage Publications, Inc; 2002. p. 386-88.

164. Polit DF, Hungler, B.P. *Assessing data quality*. In: Polit DF, Hungler, B.P, editor. Nursing Research. Principles and Methods. seventh ed. Philadelphia: Lippincott Williams & Wilkins; 2007. p. 432-37.

APPENDICES

APPENDIX I: QUESTIONNAIRE #1

Université de Montréal

UNIVERSITÉ DE MONTRÉAL
FACULTÉ DE MÉDECINE DENTAIRE
DÉPARTEMENT DE DENTISTERIE DE RESTAURATION
SECTION : PROTH ÈSE AMOVIBLE

Questionnaire# 1

Date

				/			/		
a	a				m	m		j	j

Numéro de dossier

1

Section A: Questionnaire sociodémographique

A.1. Êtes vous ❒ Mâle ou ❒ Femelle ?

A.2. Date de naissance: Année ⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋

A.3. Quels sont les trois (3) premières lettres/chiffres de votre code postal? ⌊_⌋⌊_⌋⌊_⌋

A.4. Êtes-vous né(e) au Canada? ❒ Oui ❒ Non (dans quel pays êtes-vous né(e)?): _____

A.4.1. Si non, quand avez-vous immigré au Canada? Année : ⌊_⌋⌊_⌋⌊_⌋⌊_⌋

A.5. Êtes-vous une personne autochtone? ❒ Oui ❒ Non
Si Non, S'il vous plaît, allez à la question A.7
Si Oui ➢ A.5.1. Êtes-vous: ❒ Indien nord-américain ❒ Métis ❒ Inuit (Esquimau)

A.6. Êtes-vous membre d'une bande indienne ou d'une Première nation ? ❑ Oui ❑ Non
Si Oui ➢ Quelle bande indienne ou Première nation (p. ex. Musqueam, etc.)?_____

A.7. Quelle est votre origine ethnique (veuillez en choisir plus d'une, si elles sont pertinentes) ?

❒ Africain (Afrique /Afro-américain)

❒ Asie de l'Est (S'il vous plaît cocher une case: ❒ Chinois, ❒ Japonais, ❒Coréen)

❒ Européen (par exemple Slaves, Germaniques, Anglo-saxon, Scandinave, Grecque)

❒ Autochtones / Natif américain

❒ Amérique du nord (Canadien-français, Canadien-anglais, Américain, Mexicain)

❒ Amérique du Sud (par exemple Latine / Hispano-américain)

❒ Asie du sud (par exemple des Indes orientales, Pakistanais, Sri lankais)

❒ Asie du sud est (par exemple au Cambodge, Indonésie, Laotien, Vietnamien)

❒ Moyen-Orient /Afrique du nord (par exemple Afghan, Algérien, Marocain, Égyptien, Iranien, Irakien, Israéliens, Palestinien, Syrien, Tunisien, Turc)

❒ Autre ➢ Veuillez préciser :_____

En référant à la liste ci-dessus:

A.8. Quel est l'origine culturelle et géo ethnique **de vos parents**?

Mère? _____
Père? _____

A.9. Quel est l'origine culturelle et géo ethnique **de vos grands- parents**?

Mère du père? _____ Mère de la mère? _____
Père du père? _____ Père de la mère? _____

A.10. Quel est votre langue maternelle?

❒ Française ❒ Anglaise ❒ Arabe ❒Espagnole ❒ Italienne ❒ Autre:_____

A.11. Quel est votre revenu personnel?

❒ Moins que $10,000 par année
❒ $10,000 à $19,999 par année
❒ $20,000 à $ 29,999 par année
❒ $30,000 à $39,999 par année
❒ $40,000 à $49,999 par année
❒ $50,000 à $59,999 par année
❒ $60,000 à $ 69,999 par année
❒ $70,000 ou plus par année
❒ Ne sais pas
❒ Préfère ne pas répondre

A.12. Quel est le revenu de votre ménage?

❒ Moins que $10,000 par année
❒ $10,000 to $29,999 par année
❒ $30,000 à $49,999 par année
❒ $50,000 à $69,999 par année
❒ $70,000 à $89,999 par année
❒ $90,000 à $109,999 par année
❒ $110,000 à $139,999 par année
❒ $140,000 ou plus par an
❒ Ne sais pas
❒ Préfère ne pas répondre

A.13. Habitez-vous:

❒ Seul (e) ❒ Avec d'autres adultes ❒ En famille ❒ Préfère ne pas répondre

A.14. Quel est votre statut matrimonial?

❒ Célibataire (jamais marié(e) et aucun conjoint(e) de fait) ❒ Marié(e) ou vivant comme marié(e) ❒ Séparé (e) ❒ Divorcé (e) ❒ Veuf (ve)
❒ Autre➢ Veuillez préciser_____ ❒ Préfère ne pas répondre

A.15. Quel a été le plus haut niveau de scolarité que vous avez complété? (Veuillez en encerclez un et encerclez l'année si applicable, s'il vous plait)

❒ Pas d'école ❒ Préfère ne pas répondre

❒ École primaire: 1 2 3 4 5 6 7

❒ École secondaire: 7 8 9 10 11 12 Certificat d'équivalence

❒ Collège (CEGEP/Technique):

❒Programme pré-universitaire ❒Technologie/programme professionnel

❒ Université (professionnel): ❒ Baccalauréat ❒Maîtrise ❒Doctorat

A.16. Quel est votre statut professionnel actuel ?

❒ Travailleur à temps plein
❒ Femme au foyer /soignant
❒ Travailleur à temps partiel
❒ Handicap médical
❒ Travailleur occasionnel
❒ À la retraite
❒ Travailleur à domicile
❒ Au chômage ⌊_⌋⌊_⌋ années⌊_⌋ ⌊_⌋ mois
❒ Étudiant
❒ Autre_____

Section B: Modes de vie

B.1.Selon votre **activité physique,** vous considéreriez-vous comme :
❒ Très actif ❒ Moyennement actif ❒ Assez actif ❒ Légèrement actif ❒ Pas du tout actif

B.2. **Au cours de la dernière semaine**, combien de jours avez-vous fait un total de 30 minutes ou plus d'activité physique qui a été suffisante pour élever votre rythme respiratoire. (Veuillez encercler une réponse) (Cela peut inclure le sport, l'exercice et la marche rapide ou du vélo pour le loisir ou pour se déplacer, mais **ne devrait pas** inclure les travaux ménagers ou l'activité physique faisant partie de votre travail.)

0 1 2 3 4 5 6 7

B.3. Êtes-vous motorisé (voiture, camionnette, moto, etc ...)? ❒ Oui ❒ Non

B.4. Quel est le moyen de transport le plus courant que vous utilisez ?

❒ Ma propre voiture ❒ Covoiturage ❒ Taxi ❒ Transports publics ❒ Marche / Vélo

B.5. Avez-vous déjà fumé un total de 100 cigarettes ou plus durant votre vie?

❒ Oui ❒ Non (Si non, veuillez passer à la question B.12) ❒ Je ne sais pas ❒ Je préfère ne pas répondre

B.6. Y a-t-il déjà eu une période durant laquelle vous avez fumé des cigarettes régulièrement (au moins une fois par semaine)?

❒ Oui ❒ Non ❒ Je ne sais pas ❒ Je préfère ne pas répondre

B.7. Quel âge aviez-vous la première fois quand vous avez commencé à fumer des cigarettes régulièrement? ⌊_⌋⌊_⌋ Ans

B.8 Fumez-vous encore des cigarettes?

❒ Oui ❒ Non (Si non, s'il vous plaît passez à la deuxième partie de cette question) ❒ Je ne sais pas ❒ Je préfère ne pas répondre

B.8.1. Si non, quel âge aviez-vous lorsque vous avez cessé de fumer régulièrement : ⌊_⌋⌊_⌋ Ans

B.9. Pendant les périodes où vous fumiez, combien de cigarettes aviez-vous **l'habitude** de fumer? (généralement 1 paquet contient 20 cigarettes) ⌊_⌋⌊_⌋ # de cigarettes

❒ Par jour ❒ Par semaine ❒ Par mois ❒ Je ne sais pas ❒ Je préfère ne pas répondre

B.10. Est-ce qu'il y a déjà eu des périodes pendant lesquelles vous aviez arrêté de fumer pendant au moins 12 mois et aviez recommencé à nouveau?

❒ Oui : De l'âge└─┘ à l'âge└─┘ ❒ Non ❒ Je ne sais pas ❒ Je préfère ne pas répondre
De l'âge└─┘ à l'âge└─┘
De l'âge └─┘ à l'âge └─┘

B.11. Nous voudrions avoir une idée sur le type et la quantité de cigarettes que vous aviez fumé à différents moments de votre vie. Nous voudrions que vous pensiez à quatre années différentes dans votre vie. Essayez s'il vous plait de vous rappeler de vos habitudes de consommation de tabac à ces moments (s'il y a lieu).

De (âge)	À (âge)	Nombre de cigarettes par jour	Marque la plus fumée	Type le plus fumé	
				❒ Avec filtre	❒ Roulé
				❒ Sans filtre	❒ Je ne sais pas
				❒ Avec filtre	❒ Roulé
				❒ Sans filtre	❒ Je ne sais pas
				❒ Avec filtre	❒ Roulé
				❒ Sans filtre	❒ Je ne sais pas
				❒ Avec filtre	❒ Roulé
				❒ Sans filtre	❒ Je ne sais pas

B.12. Au cours des 12 derniers mois, avez-vous bu de la **bière**? (S'il vous plaît ne pas inclure bière sans alcool.) ❒ Non (passez à la question suivante) ❒ Oui

B.12.a) Combien de fois avez-vous bu de la **bière en été**?

❒ **Jamais** ❒ 1fois par mois ou moins ❒ 2-3 fois par mois
❒ 1-2 fois par semaine ❒ 3-4 fois par semaine ❒ 5-6 fois par semaine
❒ 1fois par jour ❒ 2-3 times fois par jour ❒ 4-5 fois par jour
❒ 6 fois ou plus par jour

B.12.b) Combien de fois avez-vous bu **de la bière pendant le reste de l'année**?

❒ **Jamais** ❒ 1fois par mois ou moins ❒ 2-3 fois par mois
❒ 1-2 fois par semaine ❒ 3-4 fois par semaine ❒ 5-6 fois par semaine
❒ 1fois par jour ❒ 2-3 times fois par jour ❒ 4-5 fois par jour
❒ 6 fois ou plus par jour

B.12.c) Chaque fois que vous avez bu **de la bière**, quelle quantité en buviez-vous habituellement?

❒ Moins que 1 cannette ou bouteille de 12 onces
❒1 à 3 cannettes ou bouteilles de 12 onces
❒ Plus de 3 cannettes ou bouteilles de 12 onces

B.13. Combien de fois avez-vous bu **du vin** ou **des panachés de vin**?

❒ **Jamais** (Passez à la question B.14.) ❒ 1fois par mois ou moins ❒ 2-3 fois par mois
❒ 1-2 fois par semaine ❒ 3-4 fois par semaine ❒ 5-6 fois par semaine
❒ 1fois par jour ❒ 2-3 fois fois par jour ❒ 4-5 fois par jour
❒ 6 fois ou plus par jour

B.13.a) Chaque fois que vous avez bu **du vin** ou **des panachés de vin**, quelle quantité en buviez- vous habituellement?

❒Moins de 5 onces ou moins de 1 tasse
❒5 à 12 onces ou 1 à 2 tasses
❒ Plus de 12 onces ou plus de 2 tasses

B.14. Combien de fois avez-vous bu **de la liqueur** ou **des cocktails**?

❒ **Jamais** ❒ 1fois par mois ou moins ❒ 2-3 fois par mois
❒ 1-2 fois par semaine ❒ 3-4 fois par semaine ❒ 5-6 fois par semaine
❒ 1fois par jour ❒ 2-3 times fois par jour ❒ 4-5 fois par jour
❒ 6 fois ou plus par jour

B.14.a) Chaque fois que vous avez bu **de la liqueur** ou **des cocktails,** quelle quantité en buviez-vous habituellement?

❒ Moins de 1 tournée de liqueur
❒1 à 3 tournées de liqueur
❒ Plus de 3 tournées de liqueur

Section C: Antécédents médicaux

C.1. Êtes-vous actuellement suivi par un médecin ? ❒ Oui ❒ Non
Si oui, s'il vous plaît expliquer la raison:_____

C.2. S'il vous plaît vérifiez si vous avez une des maladies suivantes et pour combien de temps vous avez eu cette (ces) maladie(s).

liste de maladies	Oui	Non	Depuis
Maladie osseuse	❒	❒	
Ostéoporose	❒	❒	
Diabète	❒	❒	
Problème de thyroïde	❒	❒	
Problème parathyroïdien	❒	❒	
Maladie hépatique (hépatite: virus A, B, C, cirrhose, etc)	❒	❒	
Maladie cardiaque (infarctus, angine, problèmes valvulaires)	❒	❒	
Problèmes sanguins (hémophilie, des saignements prolongés, anémie)	❒	❒	
Maladies vénériennes (V.D.)	❒	❒	
Maladie rénale	❒	❒	
Sclérodermie	❒	❒	
Arthrite, arthrose	❒	❒	
Maladie mentale	❒	❒	
Asthme, Problèmes pulmonaires	❒	❒	
Dyskinésie buccale	❒	❒	

C.3. Veuillez vérifier si vous prenez présentement un de ces médicaments ou si vous en avez pris dans les 6 derniers mois.

liste de médicaments	Oui	Non	Depuis
Médicaments thyroïdiens (lévothyroxine, Méthimazole, Carbimazole ...)	❒	❒	
Les bisphosphonates (Fosamax)	❒	❒	
Antiépileptiques (Carbamazépine, Phénytoïne .....)	❒	❒	
Immuno-suppresseurs (Méthotrexate, l'azathioprine, Pénicillamine ... ..)	❒	❒	
Anticoagulants (Héparine, Warfarine, Pradaxa ...)	❒	❒	
Corticoïdes (Prednisolone, Bétaméthasone, l'hydrocortisone ....)	❒	❒	
Anti arthritiques (Colchicine ...)	❒	❒	
Anti allergiques (Chlorphéniramine ...)	❒	❒	
L'hormonothérapie (œstrogène, Contraceptifs ... ..)	❒	❒	
Antibiotiques (Clindamycine, l'érythromycine ...)	❒	❒	
Psychothropes (Chlorpromazine, la phénothiazine, Carbonate de lithium..)	❒	❒	
Les anti-hypertenseurs (diurétiques, bêta-bloquants, la méthyldopa ... ..)	❒	❒	
Analgésiques / Anti inflammatoires non stéroïdiens (Aspirine, Ibuprofène, la codéine, Acétaminophène, Morphine ...)	❒	❒	

Autres: Spécifiez:.....

C.4. Avez-vous déjà subi une chimiothérapie ou une radiothérapie pour traiter un cancer ou une tumeur? ❒ Oui ❒ Non

Si oui, dans quelle partie?.....

C.5. Faites-vous l'usage de drogues? ❒ Oui ❒ Non

Si oui, depuis ……..

Section D: Utilisation des services dentaires

D.1. Consultez-vous souvent un professionnel dentaire?

❒ Plus d'une fois par an pour un contrôle ou un traitement
❒ Environ une fois par an pour un contrôle ou un traitement
❒ Jamais
❒ Moins d'une fois par an pour un contrôle ou un traitement
❒ Seulement pour des soins d'urgence

D. 2. Quand pensez-vous que vous avez besoin d'une visite chez le dentiste? (Veuillez cocher une réponse)

❒ En moins d'une semaine
❒ De 1 semaine à moins de 1 mois
❒ De 1 mois à moins de 3 mois
❒ De 3 mois à moins de 6 mois
❒ 6 mois ou plus
❒ Je ne sais pas

D. 3. À quand remonte la dernière fois que vous avez vu un professionnel dentaire?

❒ Il ya moins de 1 an
❒ 1 an à moins de 2 ans
❒ 2 ans à moins de 3 ans
❒3 ans à moins de 4 ans
❒4 ans à moins de 5 ans
❒5 ans ou plus
❒ Jamais

S'il vous plaît expliquer pourquoi ?.....

D. 4. Combien de fois avez-vous visité le dentiste durant les 12 derniers mois? ⌊_⌋⌊_⌋

D.5. Où a eu lieu votre dernière visite dentaire? (Veuillez cocher une réponse)

❒ Pratique dentaire privée (y compris un spécialiste) ❒ École/Université dentaire / ❒ Hôpital

❒ Denturologiste ❒ Service de base militaire ❒ Autre site:_____

D.6. Pourquoi préférez-vous voir un dentiste privé? (S'il vous plaît cochez une réponse)

❒ La qualité des soins ❒ Pour ne pas avoir à attendre ❒ Le traitement n'est pas disponible à la clinique publique ❒ Aucune clinique publique accessible ❒ La continuité des soins ❒Autres_____

D.7. Qui pourrait influencer votre décision de subir des soins ou des traitements dentaires? (S'il vous plaît vérifiez les réponses qui s'appliquent:)

❒ Mon dentiste ❒ Mon hygiéniste ❒ Ma famille ❒ Moi

Section E: Habitudes d'hygiène buccodentaire

E.1. En moyenne, combien **de fois par jour** brossez-vous les dents (ou nettoyez-vous vos prothèses)?

└┘└┘ Fois

E.2. En moyenne, combien **de fois par semaine** utilisez-vous la soie dentaire?

└┘└┘ Fois ❒ Non applicable

E.3. En moyenne, combien **de fois par semaine** utilisez-vous un bain de bouche? └┘└┘ Fois

E.4. Est-ce que votre eau du robinet est fluorée? ❒ Oui ❒ Non ❒ Ne sais pas

Section F: Anxiété dentaire

F.1. Si vous deviez vous rendre demain chez le dentiste, comment vous sentiriez-vous à ce sujet?

❒ J'aimerais qu'elle soit une expérience relativement agréable.
❒ Je ne me soucierais pas d'une façon ou l'autre.
❒ Je serais un peu inquiet à ce sujet.
❒ Je craindrais que ce soit désagréable et douloureux.
❒ J'aurais très peur de ce que le dentiste pourrait faire

F.2. Lorsque vous attendez votre tour au cabinet dentaire, comment vous sentez-vous?

❒ Détendu(e) ❒ Un peu inquiet(e) ❒ Tendu(e) ❒ Soucieux (se)
❒ Tellement anxieux (se) que je deviens trempé(e) de sueur ou me sens presque physiquement malade.

F.3. Lorsque vous êtes dans la chaise dentaire, alors que le dentiste prépare son fôret pour commencer à travailler sur vos dents, comment vous sentez-vous?
❒ Détendu(e) ❒ Un peu inquiet(e) ❒ Tendu(e) ❒ Soucieux (se)
❒ Tellement anxieux (se) que je deviens trempé(e) de sueur ou me sens presque physiquement malade.

F.4. Vous êtes dans la chaise du dentiste pour nettoyer vos dents. Pendant que vous attendez que le dentiste prépare les instruments dont il se servira pour nettoyer vos dents autour des gencives, comment vous sentez-vous?

❒ Détendu(e) ❒ Un peu inquiet(e) ❒ Tendu(e) ❒ Soucieux (se)
❒ Tellement anxieux (se) que je deviens trempé(e) de sueur ou me sens presque physiquement malade.

Section G: Caractéristique psychologique

Voici un certain nombre d'énoncés que les gens utilisent souvent pour se décrire. S'il vous plaît lire chaque énoncé et encerclez le numéro approprié à côté de l'énoncé qui correspond à votre réponse. Il n'y a aucune réponse juste ou fausse: Votre impression est la seule chose qui compte.

0=Faux 1=Plutôt faux 2= Neutre 3= Plutôt vrai 4= Vrai

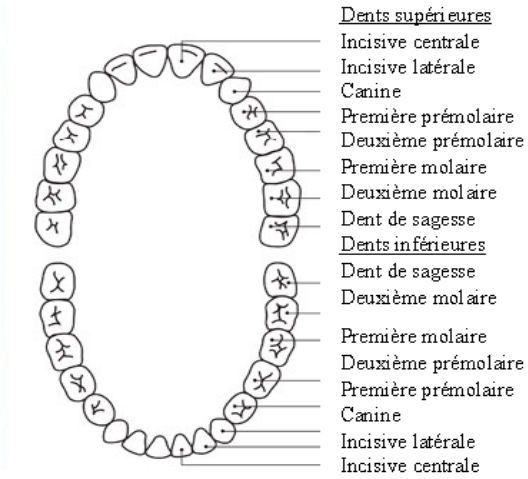
G.1. J'ai un contact facile, quand je rencontre des gens.	**0 1 2 3 4**	G.8. Je trouve difficile de démarrer une conversation.	**0 1 2 3 4**
G.2. Je fais souvent des histoires sur des choses sans importance.	**0 1 2 3 4**	G.9. Je suis de mauvaise humeur.	**0 1 2 3 4**
G.3. Je parle souvent à des étrangers.	**0 1 2 3 4**	G.10. Je suis une personne renfermée.	**0 1 2 3 4**
G.4. Je me sens souvent malheureux.	**0 1 2 3 4**	G.11. Je veux plutôt garder mes distances avec les autres.	**0 1 2 3 4**
G.5. Je suis souvent irritable.	**0 1 2 3 4**	G.12. Je me retrouve souvent inquiet pour quelque chose.	**0 1 2 3 4**
G.6. Je me sens souvent inhibé (e) dans les interactions sociales.	**0 1 2 3 4**	G.13. Je suis souvent déprimé (e).	**0 1 2 3 4**
G.7. J'ai une vision sombre des choses.	**0 1 2 3 4**	G.14. Pour socialiser, je ne sais pas comment débuter la conversation.	**0 1 2 3 4**

Section H: Histoire de la perte des dents

H.1. Combien de dents avez-vous actuellement dans votre bouche (y compris les dents avec des couronnes dessus ? Les dents du haut:__|__ les dents inférieures:__|__

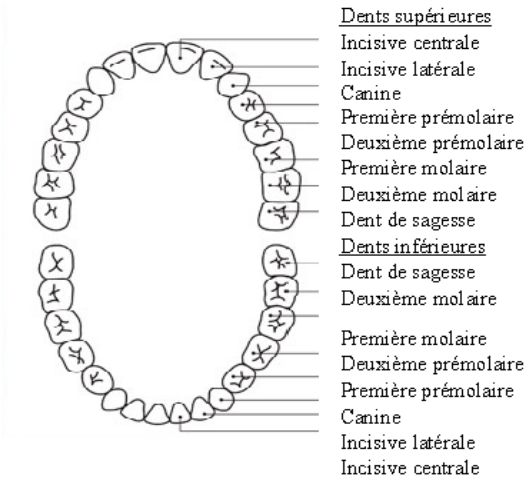
H.2. Dans le schéma suivant, veuillez tracer un cercle autour des dents que vous avez actuellement en bouche et une croix (X) en travers des dents que vous avez perdues.

Droit Gauche



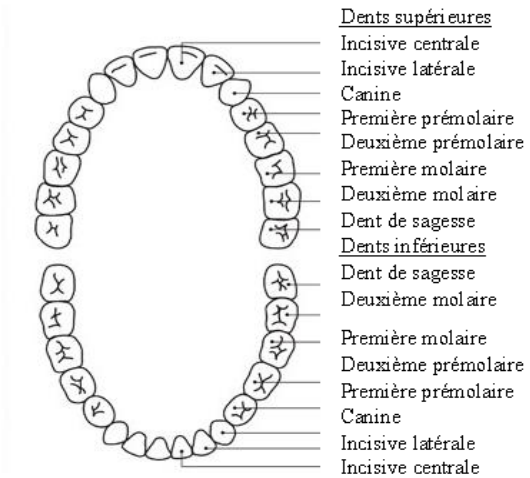
H.3. Veuillez tracer un cercle autour des dents que vous avez perdues quand vous étiez entre 20-34 ans:

Droit Gauche



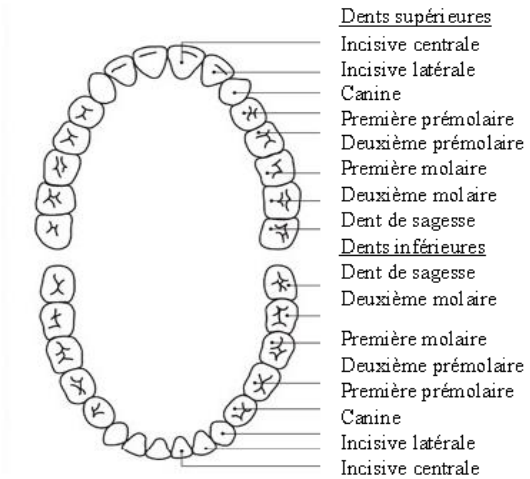
H.4. Veuillez tracer un cercle autour des dents que vous avez perdues quand vous étiez entre 35-49 ans:

Droit Gauche



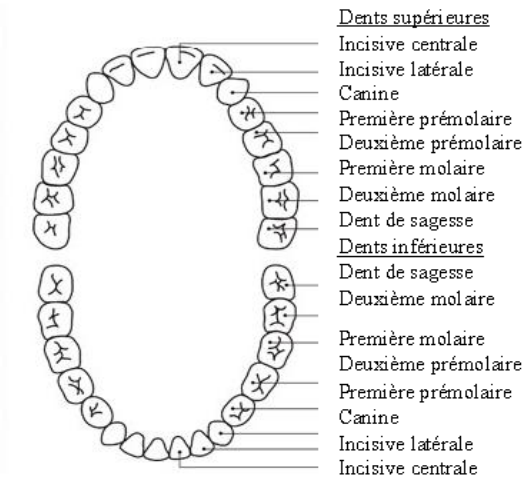
H.5. Veuillez tracer un cercle autour des dents que vous avez perdues quand vous étiez entre 50-64 ans:

Droit Gauche



H.6. Veuillez tracer un cercle autour des dents que vous avez perdues quand vous étiez ≥65 ans:

Droit Gauche



H.7. Combien de paires de dents naturelles postérieures (en arrière) dans le côté droit font contact pendant la mastication?

0 1 2 3 4 5

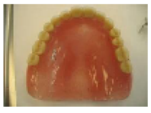
H.8. Combien de paires de dents naturelles postérieures (en arrière) dans le côté gauche font contact pendant la mastication?

0 1 2 3 4 5

Avant de répondre aux questions suivantes, veuillez prêter attention à ces définitions:

Prothèse partielle: une prothèse amovible avec des dents artificielles qui remplacent **certaines** de vos dents naturelles perdues, à la mâchoire supérieure et / ou inférieure.

Prothèse complète: une prothèse amovible avec des dents artificielles qui remplacent **l'ensemble** de vos dents naturelles perdues, à la mâchoire supérieure et / ou inférieure.



H.9. Portez-vous une prothèse partielle ou complète?

❒ Oui (Si oui, s'il vous plaît allez à la question 10) ❒ Non

H.10. S'il vous plaît choisir la meilleure réponse pour les prochaines questions dans le tableau.

A:Âge quand vous avez commencé à porter un dentier	**B: Type de dentier**	**C: Mâchoire**	**D: Portez-vous les prothèses pour mastiquer**
❒ Avant 20 ans	❒ Prothèse complète ❒ Prothèse partielle	❒ Supérieure ❒ Inférieure ❒ Les deux ❒ Non applicable	❒ Oui ❒ Non
❒ Entre 20-34	❒ Prothèse complète ❒ Prothèse partielle	❒ Supérieure ❒ Inférieure ❒ Les deux ❒ Non applicable	❒ Oui ❒ Non
❒ Entre 35-49	❒ Prothèse complète ❒ Prothèse partielle	❒ Supérieure ❒ Inférieure ❒ Les deux ❒ Non applicable	❒ Oui ❒ Non
❒ Entre 50-64	❒ Prothèse complète ❒ Prothèse partielle	❒ Supérieure ❒ Inférieure ❒ Les deux ❒ Non applicable	❒ Oui ❒ Non
❒ 65 et plus	❒ Prothèse complète ❒ Prothèse partielle	❒ Supérieure ❒ Inférieure ❒ Les deux ❒ Non applicable	❒ Oui ❒ Non

APPENDIX II : PROTHÈSE COMPLÈTE AMOVIBLE

Date **Numéro de dossier**

				/			/		
a	a				m	m		j	j

PROTHÈSES COMPLÈTES AMOVIBLES

Historique des Prothèses

Avez-vous déjà porté des prothèses complètes? ☐ Oui ☐ Non
Quel type: ☐ C/ ☐ /C ☐ C/C ☐ Prothèse immédiate ☐ Prothèse transitoire
Nombre de prothèses: ⌊_⌋
Depuis combien de temps: ⌊_⌋⌊_⌋ ans
Âge de la (des) prothèse (s) actuelle (s): Max: ⌊_⌋⌊_⌋ ans, Mand: ⌊_⌋⌊_⌋ ans
Cause de la perte dentaire: ☐ Maladies parodontales ☐ Caries ☐ Traumatisme ☐ Autres

Motif de consultation

☐ Esthétique non-satisfaisante ☐ Mastication non-satisfaisante ☐ Rétention non-satisfaisante
☐ Inconfort, blessures ☐ Besoin de réparation ☐ Nouvelle prothèse suite à l'extraction des dents ☐ Renouvellement de l'ancienne prothèse sans plainte spécifique

Attentes du patient concernant les nouvelles prothèses:

Évaluation de la prothèse actuelle

Espace libre d'inocclusion	❒ Adéquat (3-7mm)	❒ Inadéquate (>7mm or <3mm)
DVO	❒ Acceptable	Inacceptable: ❒Réduite ❒Excessive
Occlusion	❒ Balancée	❒ Glissement (contact irrégulier)
Rétention de la prothèse supérieure (résistance à la traction verticale)	❒ Résistance adéquate	❒ Pas de résistance
Stabilité de la prothèse supérieure		
1) Déplacement latéral	❒ Déplacement lat ≤5mm	❒ Déplacement lat >5mm
2) Mvt. de bascule prononcé	❒ Mvt.de bascule minimal	❒ Mvt.de bascule prononcé
Stabilité de la prothèse inférieure		
1) Déplacement, bouche ouverte	❒ Reste en place	❒ Déplacement perceptible
2) Mouvement de la langue	❒ Pas de mouvement	❒ Mouvement prononcé
3) Mvt. antéro-postérieur	❒ Mouvement minimal	❒ Mouvement prononcé

Niveau d'hygiène

1) Combien de fois par jour/semaine vous nettoyez vos prothèses? ⌊_⌋ fois par jour ⌊_⌋ fois par semaine

2) Comment nettoyez-vous vos prothèses?
❒ Rinçage
❒ Brossage
❒ Tremper dans un nettoyant pour dentiers

3) Retirez-vous vos prothèses pendant la nuit? Prothèse Supérieure ❒ Oui ❒ Non ProthèseInférieure ❒ Oui ❒ Non

4) Utilisez-vous un rince-bouche? ❒Oui ⌊_⌋ fois par jour ⌊_⌋ fois par semaine ❒ Non

TISSUS MOUS

EXAMEN ORAL

Visage

Symétrie
☐ Symétrique
☐ Asymétrique

Facial frontal
☐ Triangulaire
☐ Carré
☐ Ovoïde
☐ Autres

Facial profil
☐ Droit
☐ Convexe
☐ Concave

Longueur de la lèvre supérieure

Favorable
☐ Moyenne

Défavorable
☐ Longue ☐ Court

Salive

Favorable
☐ Classe I (normale)

Défavorable
☐ Classe II (insuffisante)
☐ Classe III (excessive)

Voile du palais

Favorable
☐ Classe I (rétention idéale)
☐ Classe II (rétention bonne)

Défavorable
☐ Classe III (rétention faible)

Insertions freinales

Favorable
☐ Classe I (idéal)
☐ Classe II (moyen)

Défavorable
☐ Classe III (requiert une correction chirurgicale)

Langue

Position de la langue

Favorable
☐ Normale

Défavorable
☐ Classe I (rétrudée)
☐ Classe II (tendue tirée vers l'arrière et enroulée vers le haut)

Taille de la langue

Favorable
☐ Classe I (normale)

Défavorable
☐ Classe II (changement de forme et de fonction)
☐ Classe III (excessivement large)

Insertions musculaires mandibulaires

☐ Type A (insertions adéquates)
☐ Type B (insertions adéquates exception mentonnier proche de la crête alvéolaire)
☐ Type C (insertions adéquates exception mentonnier et génioglosse proches de la crête alvéolaire)
☐ Type D (ins.muq. en post seulement)
☐ Type E (Pas d'ins.muq., joue/lèvre déplace la langue)

Contrôle neuromusculaire

☐ Adéquat
☐ Inadéquat

États de la muqueuse

Code	Description	Max	Mand
1	Aucune anomalie de la muqueuse	☐	☐
2	Perlèche	☐	☐
3	Plaques blanches de la muqueuse	☐	☐
4	Stomatite prothétique **Classification de Bergendal et Isacsson** Degré 0: muqueuse normale (rosée) Degré 1: érythème léger Degré 2: érythème sévère **Classification de Newton** Classe I: Inflammation localisée Classe II: Inflammation généralisée Classe III: Inflammation généralisée ou localisée avec hyperplasie papillaire	 ☐ ☐ ☐ ☐ ☐ ☐	 ☐ ☐ ☐ ☐ ☐ ☐
5	Ulcération aphteuse	☐	☐
6	Hyperplasie d'origine prothétique (épulis)	☐	☐
7	Hyperkératose	☐	☐
8	Ulcération traumatique ou non spécifique	☐	☐
9	Glossite	☐	☐
10	Autres-Précisez ……..	☐	☐

Type de muqueuse

Type	Max	Mand
Mobile:		
a) Antérieure	☐	☐
b) Postérieure	☐	☐
Non mobile	☐	☐
Épaisse	☐	☐
Inflammée	☐	☐
Fibreuse	☐	☐

TISSUS OSSEUX

Tubérosité

Présente
- ☐ Rétentive
- ☐ Non rétentive
- ☐ Absente

Forme du Palais dur

- ☐ Plat
- ☐ Rond
- ☐ En forme de V
- ☐ En forme de U
- ☐ Profond

Rapport inter-crêtes

- ☐ Classe I (normal)
- ☐ Classe II
- ☐ Class III

Espace inter-arche

Favorable

- ☐ Classe I (idéal)

Défavorable

- ☐ Classe II
- ☐ Classe III (limité)

Une correction chirurgicale est-elle indiquée? ☐ Oui ☐ Non

Torus

	Absent	Présent
Mandibule	☐	☐
Maxillaire	☐	☐

Si présent, une réduction chirurgicale est-elle indiquée? ☐ Oui ☐ Non

ATM

Symptômes

❒ Symptomatique : ☐ Grincement ☐ Claquement ☐ Fatigue ou de la tension au niveau des muscles du visage ou de la mastication ☐ Douleur à la fonction mandibulaire lors de l'ouverture ou de fermeture buccale ☐ Maux de tête ou des migraines

❒ Asymptomatique

Signes

☐ Claquement et /ou crépitation durant le mouvement ☐ Palpation latérale et postérieure de l'ATM en mouvement ☐ Limitation de l'ouverture buccale ☐ Déviation de la mandibule sur ouverture de la bouche

Hauteur de la crête Résiduelle

- ☐ Type I: 21mm ou plus
- ☐ Type II: 16-20mm
- ☐ Type III: 11-15mm
- ☐ Type IV: 10mm ou moins

Résorption de l'os alvéolaire

Mandibule

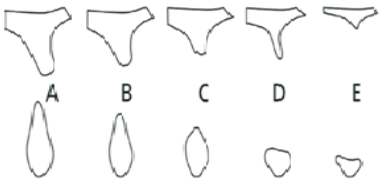
- ☐ Dentée
- ☐ Post extraction
- ☐ Classe 3 (Bien arrondie)
- ☐ Classe 4 (crête en lame de couteau)
- ☐ Classe 5 (crête plate)
- ☐ Classe 6 (crête de forme négative)

Maxillaire

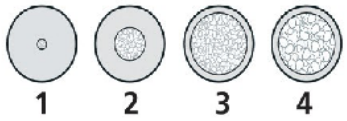
- ☐ Denté
- ☐ Post extraction
- ☐ Classe 3(Bien arrondie)
- ☐ Classe 4 (peu de perte en largeur)
- ☐ Classe 5/6 (perte en largeur et en hauteur)

Examen radiologique

Quantité d'os (A-E)



Qualité d'os (1-4)



	A	B	C	D	E
Max	☐	☐	☐	☐	☐
Mand	☐	☐	☐	☐	☐

	1	2	3	4
Max	☐	☐	☐	☐
Mand	☐	☐	☐	☐

Prothèses implanto-portées

Prothèses actuelles adéquates pour guide radiologique et chirurgical: ☐ Oui ☐ Non

Hauteur osseuse disponible: ⌊_⌋⌊_⌋ mm

Distance suffisante entre les deux trous mentonniers: ☐ Oui ☐ Non

Nombre d'implants souhaités: ⌊_⌋⌊_⌋ Type d'implants:_____

Longueur: ⌊_⌋⌊_⌋ mm Emplacement: _____

PLAN DE TRAITEMENT

A: pré-prothétique

Conditions nécessitant une chirurgie pré-prothétique

- ☐ Extraction
- ☐ Interventions mineures sur les tissus mous
- ☐ Chirurgie implantaire

B: prothétique

Traitement suggéré (Veuillez choisir plus de un, si plusieurs traitements sont nécessaires)

☐ Nouvelles prothèses : ☐ **C/C** ☐ **C/** ☐ **/C** ☐ Prothèse-implanto-portées

☐ Regarnissage/ Rebasage ☐ Réparation ☐ Immédiates

PRONOSTIC

Facteurs influençants	Favorable	Défavorable
Facteurs anatomiques	❒	❒
Maladie systémique sous-jacente	❒	❒
Considération orofaciale (symptômes d'ATM….)	❒	❒
Facteurs psychosociaux	❒	❒
Antécédents prothétiques	❒	❒

En général, le pronostic est	Bon	Réservé	Pauvre
Max	☐	☐	☐
Mand	☐	☐	☐

Signature du patient: _____ **Date:** _____

Signature de l'étudiant: _____ **Date:** _____

Signature du clinicien: _____ **Date:** _____

CHOIX DES DENTS

Compagnie_____	Quantité	Moule	Couleur	Résine acrylique	Porcelaine	Degré
Sup. Ant.						
Inf. Ant.						
Post. Inf.						
Post. Sup.						

Lors de la session d'essayage, j'ai attentivement regardé l'agencement, la couleur et la forme des dents de mes futures prothèses. Je suis satisfait de l'apparence de mes prothèses.

Date: _____ **Signature du patient:** _____

CONSENTEMENT

Je comprends les avantages et les inconvénients associés aux différentes options de traitement proposées et je comprends aussi les inconvénients de ne faire aucun traitement.

Je comprends que le prix ci-dessus est une estimation du coût réel et peut être modifié si des traitements supplémentaires sont requis par ma condition pendant le traitement.

Je comprends que le traitement sera effectué par les étudiants dans le cadre de leur formation et en ce sens, ils peuvent avoir besoin de plus de temps.

Je m'engage à respecter les rendez-vous qui me seront proposés et à acquitter les frais encourus par le traitement de ma condition aux moments opportuns.

Date: _____ **Signature du patient:**_____

APPENDIX III: PROTHÈSE PARTIELLE AMOVIBLE

Date / / (y y m m d d)

Numéro de dossier

PROTHÈSE PARTIELLE AMOVIBLE

Historique des Prothèses

Avez-vous déjà porté des prothèses ? ☐ Oui ☐ Non
Quel type : ☐ P/ ☐ /P ☐ P/P
Nombre de prothèses: ⌊_⌋
Depuis combien de temps: ⌊_⌋⌊_⌋ ans
Âge de la (des) prothèse (s) actuelle (s): Max: ⌊_⌋⌊_⌋ ans, Mand: ⌊_⌋⌊_⌋ ans
Cause de la perte dentaire: ☐ Maladies parodontales ☐ Caries ☐ Traumatisme ☐ Autres

Classification de Kennedy

	MAX	MAND		MAX	MAND
Classe I	☐	☐	Classe IV	☐	☐
Classe II	☐	☐	Classe V	☐	☐
Classe III	☐	☐	Classe VI	☐	☐

Pour toute modification, veuillez determiner le numéro et le type (Antérieure/Postérieure)de modification?
MAX: Numéro:…….. Type :……
MAND: Numéro: …… Type:……

Motif de consultation

☐ Esthétique non-satisfaisante ☐ Mastication non-satisfaisante ☐ Rétention non-satisfaisante
☐ Inconfort, blessures ☐ Besoin de réparation ☐ Nouvelle prothèse suite à l'extraction des dents ☐ Renouvellement de l'ancienne prothèse sans plainte spécifique

Attentes du patient concernant les nouvelles prothèses:

Évaluation de la prothèse actuelle

Rétention de la prothèse	❒ Excellente (résistance au déplacement vertical)	❒ Bonne (une résistance modérée au déplacement vertical)	❒ Mauvaise (pas de résistance au déplacement vertical).
Stabilité de la prothèse	❒ Excellente (stable au mouvement de rotation et les appuis occlusaux sont ajustés)	❒ Bonne (stable, mais certains appuis sont pas ajustés)	❒ Mauvaise (déplacée par mouvement rotationnel)
Châssis métallique	❒ Bien-ajusté	❒ Adaptation des appuis occlusaux et crochets inacceptable	❒ Fracturé
Adaptation de la base acrylique à la muqueuse	❒ Bien-ajustée	❒ Légère imprécision	❒ Adaptation inacceptable

1

EXAMEN ORAL

Évaluation des dents piliers

Veuillez enregistrer chaque élément pour toutes les dents piliers selon l'annexe. Veuillez arrondir chaque mesure au plus bas millimètre entier.

Max Dent pilier																						
	MB	B	DB	MB	B	DB	MB	B	DB	MB	B	DB	MB	B	DB	MB	B	DB
	ML	L	DL	ML	L	DL	ML	L	DL	ML	L	DL	ML	L	DL	ML	L	DL
IP																		
PP																		
SAS																		
Carie	M	B	D	M	B	D	M	B	D	M	B	D	M	B	D	M	B	D
	L		O	L		O	L		O	L		O	L		O	L		O
Mobilité																		
Relation Couronne/ Racine	❒Acceptable ❒Inacceptable			❒Acceptable ❒Inacceptable			❒Acceptable ❒Inacceptable			❒Acceptable ❒Inacceptable			❒Acceptable ❒Inacceptable			❒Acceptable ❒Inacceptable		

Mand Dent pilier																						
	MB	B	DB	MB	B	DB	MB	B	DB	MB	B	DB	MB	B	DB	MB	B	DB
	ML	L	DL	ML	L	DL	ML	L	DL	ML	L	DL	ML	L	DL	ML	L	DL
IP																		
PP																		
SAS																		
Carie	M	B	D	M	B	D	M	B	D	M	B	D	M	B	D	M	B	D
	L		O	L		O	L		O	L		O	L		O	L		O
Mobilité																		
Relation Couronne/ Racine	❒Acceptable ❒Inacceptable			❒Acceptable ❒Inacceptable			❒Acceptable ❒Inacceptable			❒Acceptable ❒Inacceptable			❒Acceptable ❒Inacceptable			❒Acceptable ❒Inacceptable		

En général, l'hygiène orale est:	□ Excellente	□ Moyenne	□ Mauvaise
En général, le taux des caries est:	□ Élevé	□ Modéré	□ Faible

Évaluation des dents piliers

Structure des dents piliers

❒ État du pilier idéal ou peu compromis. (Pas de traitement pré prothétique indiqué.)

❒ État du pilier modérément compromis. (Piliers dans 1 ou 2 sextants ont une structure dentaire insuffisante pour retenir ou supporter des restaurations et ils requièrent un traitement adjuvant localisé.)

❒ État du pilier considérablement compromis. (Piliers dans 3 sextants ont une structure dentaire insuffisante pour retenir ou supporter des restaurations et ils requièrent davantage de traitements localisés considérables.)

❒ État du pilier sévèrement compromis. (Piliers dans 4 sextants ou plus ont une structure dentaire insuffisante pour retenir ou supporter des restaurations et ils requièrent un traitement adjuvant localisé. Piliers ont un pronostic réservé.)

Occlusion

Plan occlusal □ Adéquat □ Un traitement adjuvant localisé (meulage) □ Rétablir entièrement le plan occlusal	**DVO** □ Adéquate □ À modifier : ❒Augmentée ❒ Réduite
Relation intermaxillaire □ Classe I □ Classe II division □ I □ II □ Classe III	**Support postérieur** ❒ Adéquat ❒ Inadéquat

Malformations de la crête

❒ Classe I (Perte vestibulo-linguale du contour tissulaire avec une hauteur apico-coronaire normale)

❒ Classe II (Perte tissulaire apico-coronaire avec une hauteur vestibulo-linguale normale)

❒ Classe III (Une combinaision entre perte vestibulo-linguale et apico-coronaire)

PLAN DE TRAITEMENT

A: pré-prothétique

Conditions nécessitant un traitement pré-prothétique non chirurgical

- ☐ Traitement endodontique
- ☐ Traitement de restauration : ☐ D.O (dentisterie opératoire) ☐ Couronne
- ☐ Traitement parodontal : ☐ Soins hygiéniques (détartrage…) ☐ Chirurgie

Conditions nécessitant un traitement pré-prothétique chirurgical

- ☐ Extraction
- ☐ Interventions mineures sur les tissus mous

B: prothétique

Traitement Suggéré (Veuillez choisir plus de un, si plusieurs traitements sont nécessaires)

☐ Nouvelles prothèses : ☐ **P/P** ☐ **P/** ☐ **/P** ☐ Prothèse-implanto-portée
☐ Regarnissage ☐ Rebasage ☐ Réparation

Classification de Kennedy

	MAX	MAND		MAX	MAND
Classe I	☐	☐	Classe IV	☐	☐
Classe II	☐	☐	Classe V	☐	☐
Classe III	☐	☐	Classe VI	☐	☐

Pour toute modification, veuillez determiner le numéro et le type (Antérieure/Postérieure)de modification?

MAX: Numéro:…….. Type :……
MAND: Numéro: …… Type:……

PRONOSTIC

Facteurs influençants	Favorable	Défavorable
Facteurs anatomiques	❒	❒
Maladie systémique sous-jacente	❒	❒
Considération orofaciale (symptômes d'ATM….)	❒	❒
Facteurs psychosociaux	❒	❒
Antécédents prothétiques	❒	❒
Hygiène orale	❒	❒

En général, le pronostic est	Bon	Réservé	Pauvre
Max	☐	☐	☐
Mand	☐	☐	☐

Signature du patient: _____ **Date:**_____
Signature de l'étudiant:_____ **Date:** _____
Signature du clinicien: _____ **Date:** _____

CHOIX DES DENTS

Compagnie_____	Quantité	Moule	Couleur	Résine acrylique	Porcelaine	Degré
Sup. Ant.						
Inf. Ant.						
Post. Inf.						
Post. Sup.						

Lors de la session d'essayage, j'ai attentivement regardé l'agencement, la couleur et la forme des dents de mes futures prothèses. Je suis satisfait de l'apparence de mes prothèses.

Date: _____ **Signature du patient:** _____

CONSENTEMENT

Je comprends les avantages et les inconvénients associés aux différentes options de traitement proposées et je comprends aussi les inconvénients de ne faire aucun traitement.

Je comprends que le prix ci-dessus est une estimation du coût réel et peut être modifié si des traitements supplémentaires sont requis par ma condition pendant le traitement.

Je comprends que le traitement sera effectué par les étudiants dans le cadre de leur formation et en ce sens, ils peuvent avoir besoin de plus de temps.

Je m'engage à respecter les rendez-vous qui me seront proposés et à acquitter les frais encourus par le traitement de ma condition aux moments opportuns.

Date: _____ **Signature du patient:**_____

APPENDIX IV: QUESTIONNAIRE SUR LES RÉSULTATS

Université de Montréal

UNIVERSITÉ DE MONTRÉAL
FACULTÉ DE MÉDECINE DENTAIRE
DÉPARTEMENT DE DENTISTERIE DE RESTAURATION
SECTION : PROTH ÈSE AMOVIBLE

QUESTIONNAIRE SUR LES RÉSULTATS

A: pré- traitement

B: Post-traitment

Date

				/			/		
a	a				m	m		j	j

Numéro de dossier

1

Section A: Qualité de vie

A.1. En général, diriez-vous que votre santé est?

❒ Excellente ❒ Très bonne ❒ Bonne ❒ Juste ❒ Mauvaise

A.2. En général, diriez-vous que la santé de votre bouche est?

❒ Excellente ❒ Très bonne ❒ Bonne ❒ Juste ❒ Mauvaise

A.3. Questions sur la qualité de vie reliée à la santé bucco-dentaire :

Sur une échelle de 0 à 4, veuillez encerclez le numéro qui convient le mieux à votre réponse (veuillez encercler un).	Jamais	Presque jamais	Occasionnellement	Assez souvent	Très souvent
1. Avez-vous éprouvé de la difficulté à mastiquer des aliments à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**
2. Les aliments sont-ils restés coincés entre vos dents ou dans vos prothèses ?	**0**	**1**	**2**	**3**	**4**
3. Avez-vous eu l'impression que vos prothèses étaient mal ajustées?	**0**	**1**	**2**	**3**	**4**
4. Avez-vous eu de la douleur au niveau de la bouche ?	**0**	**1**	**2**	**3**	**4**
5. Avez-vous éprouvé de la difficulté à consommer certains types d'aliments à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**
6. Avez-vous remarqué des points sensibles dans votre bouche?	**0**	**1**	**2**	**3**	**4**
7. Vos prothèses ont-elles été inconfortables ?	**0**	**1**	**2**	**3**	**4**
8. Vous êtes-vous fait du souci à cause de problèmes buccaux ?	**0**	**1**	**2**	**3**	**4**
9. Vous êtes-vous senti(e) mal à l'aise à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**
10. Avez-vous évité de consommer certains types d'aliments à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**
11. Avez-vous été incapable de manger avec vos prothèses à cause de problèmes avec celles-ci ?	**0**	**1**	**2**	**3**	**4**
12. Avez-vous dû interrompre un repas à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**
13. Avez-vous été perturbé à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**
14. Avez-vous été légèrement incommodé(e) à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**
15. Vous êtes vous abstenu(e) de sortir à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**
16. Vous êtes-vous senti(e) plus intolérant(e) envers votre famille ou votre conjoint(e) à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**

17. Avez-vous été irritable au milieu d'un groupe à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**
18. Avez-vous été incapable d'apprécier la compagnie des autres à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**
19. Avez-vous pensé que la vie était généralement moins satisfaisante à cause de problèmes dus à votre dentition, à l'état de votre bouche ou à vos prothèses ?	**0**	**1**	**2**	**3**	**4**

A.4. Durant les 12 derniers mois, vous absentiez-vous du travail ou de vos activités normales en raison de la nécessité d'avoir des soins dentaires, y compris des examens dentaires, ou à cause de problèmes au niveau de votre bouche?

❒ Oui |_|_|. |_|_| Heures (MIN: 0.5) (MAX: 99.5) ❒ Non

Section B: La satisfaction du patient

Sur une échelle de 0 à 4, veuillez encerclez le numéro qui convient le mieux à votre réponse (veuillez encercler un).	Très satisfait	Satisfait	Ni satisfait ni insatisfait	insatisfait	Très insatisfait
B.1. En général, comment est votre satisfaction concernant votre prothèse supérieure?	**0**	**1**	**2**	**3**	**4**
B.2. En général, comment est votre satisfaction concernant votre prothèse inférieure?	**0**	**1**	**2**	**3**	**4**
Rétention B.3. Comment est votre satisfaction concernant la rétention de votre prothèse supérieure?	**0**	**1**	**2**	**3**	**4**
B.4. Comment est votre satisfaction concernant la rétention de votre prothèse inférieure?	**0**	**1**	**2**	**3**	**4**
Confort B.5. Comment est votre satisfaction concernant le confort fonctionnel de vos prothèses?	**0**	**1**	**2**	**3**	**4**
Esthétique B.6. Comment est votre satisfaction concernant l'aspect de vos prothèses?	**0**	**1**	**2**	**3**	**4**
Aptitude à parler B.7. Comment est votre satisfaction concernant la parole avec vos prothèses?	**0**	**1**	**2**	**3**	**4**

Sur une échelle de 1 à 4, veuillez encerclez le numéro qui convient le mieux à votre réponse (veuillez encercler un).	Souvent	Fréquemment	Occasionnellement	Rarement
Stabilité B.8. Ressentez-vous un déplacement de la prothèse supérieure en mangeant et/ou en parlant?	**1**	**2**	**3**	**4**
B.9. Ressentez-vous un déplacement de la prothèse inférieure en mangeant et/ou en parlant?	**1**	**2**	**3**	**4**
Aptitude à mordre B.10. Avez-vous des problèmes à mordre avec vos prothèses?	**1**	**2**	**3**	**4**
Aptitude à mâcher B.11. Avez-vous des problèmes à mâcher avec vos prothèses?	**1**	**2**	**3**	**4**
B.12. Trouvez-vous des particules alimentaires sous vos prothèses?	**1**	**2**	**3**	**4**
B.13 Ressentez-vous une différence de goût des aliments à cause de vos prothèses?	**1**	**2**	**3**	**4**
B.14. Est-ce que la prothèse influence votre choix des aliments?	**1**	**2**	**3**	**4**
Sur une échelle de 1 à 4, veuillez encerclez le numéro qui convient le mieux à votre réponse (veuillez encercler un).	Souvent positive	Positive	Négative	souvent négative
Hygiène Prothétique B.15. Avez-vous de la difficulté à nettoyer vos prothèses?	**1**	**2**	**3**	**4**
B.16. Ressentez-vous une mauvaise haleine à cause de vos prothèses?	**1**	**2**	**3**	**4**
B.17. Ressentez-vous une sécheresse buccale?	**1**	**2**	**3**	**4**
B.18. Avez-vous des problèmes d'hyper sialorrhée (hyper salivation) ?	**1**	**2**	**3**	**4**

Section C: Attentes de satisfaction à l'égard de la prothèse totale

C.1. Quelle serait votre satisfaction avec de nouvelles prothèses conventionnelles?

0 ——————————————————————— 100

0= Pas du tout satisfait 100= complètement satisfait

Section D: Satisfaction par la visite dentaire

Information- communication

D.1. Après avoir discuté avec le dentiste/étudiant (e), J'ai pris connaissance de mon état buccal.
❒ Fortement en désaccord ❒ En désaccord ❒ Incertain ❒ D'accord ❒ Fortement d'accord

D.2. Après avoir discuté avec le dentiste/étudiant (e), j'ai une idée sur les modifications qui seraient apportées à mon état de santé orale, dans les quelques mois qui suivront.
❒ Fortement en désaccord ❒ En désaccord ❒ Incertain ❒ D'accord ❒ Fortement d'accord

D.3. Le dentiste/étudiant (e) m'a informé à propos de tout ce que je désirais savoir à propos de mon (mes) problème(s) dentaire(s).
❒ Fortement en désaccord ❒ En désaccord ❒ Incertain ❒ D'accord ❒ Fortement d'accord

Compréhension- acceptation

D.4. Je me sentais vraiment compris par mon dentiste/l'étudiant (e).
❒ Fortement en désaccord ❒ En désaccord ❒ Incertain ❒ D'accord ❒ Fortement d'accord

D.5. J'ai senti que ce dentiste/étudiant (e) savait vraiment comment j'ai été contrarié (e) par la possibilité de la douleur.
❒ Fortement en désaccord ❒ En désaccord ❒ Incertain ❒ D'accord ❒ Fortement d'accord

D.6. J'ai senti que ce dentiste/étudiant (e) m'a accepté en tant que personne.
❒ Fortement en désaccord ❒ En désaccord ❒ Incertain ❒ D'accord ❒ Fortement d'accord

Compétence technique

D.7. Le dentiste/étudiant (e) a été complet en faisant la procédure.
❒ Fortement en désaccord ❒ En désaccord ❒ Incertain ❒ D'accord ❒ Fortement d'accord

D.8. Le dentiste/étudiant (e) était trop agitée quand il me soignait.
❒ Fortement d'accord ❒ D'accord ❒ Incertain ❒ En désaccord ❒ Fortement en désaccord

D.9. J'ai été satisfait (e) de ce que le dentiste/étudiant (e) a fait.
❒ Fortement en désaccord ❒ En désaccord ❒ Incertain ❒ D'accord ❒ Fortement d'accord

D.10. Le dentiste/étudiant (e) semblait savoir ce qu'il faisait durant ma visite
❒ Fortement en désaccord ❒ En désaccord ❒ Incertain ❒ D'accord ❒ Fortement d'accord

APPENDIX V: ANNEXE PROTHÈSE COMPLETE AMOVIBLE

ANNEXE: PROTHÈSE COMPLETE AMOVIBLE

Évaluation fonctionnelle des prothèses dentaires [1-4]

Espace libre d'inocclusion
L'espace entre les surfaces occlusales des dents maxillaires et mandibulaires lorsque la mandibule est en position de repos physiologique.
La dimension verticale d'occlusion (DVO)
la dimension verticale d'occlusion est la hauteur de l'étage inférieur de la face lorsque les dents des maxillaires supérieur et inférieur sont en intercuspidation maximale.

Occlusion
Le patient est prié de se détendre et de fermer doucement sur ces dents postérieures plusieurs fois à partir d'une position de légère ouverture (20 mm). l'occlusion est jugée satisfaisante (quand il y a un contact régulier entre les dents et un retour compatible avec la position d'intercuspidation) ou insatisfaisante (quand il y a un contact irrégulier entre les dents et un retour non conforme avec la position d'intercuspidation ou un glissement supérieur à 4 mm).

Rétention de la prothèse supérieure
(Résistance à la traction verticale): l'ouverture buccale est de 20 mm. Notez si la prothèse tombe. Pendant que la bouche est encore ouverte, la prothèse est saisie par le pouce et l'index au niveau des prémolaires et une force descendante est appliquée. La présence ou l'absence d'une résistance appropriée est enregistrée.

Stabilité de la prothèse supérieure
(Le déplacement latéral): La stabilité en rotation est évaluée en saisissant la prothèse supérieure dans la région prémolaire avec le pouce et l'index et en appliquant une force de rotation dans le plan d'occlusion. Nous considérons le déplacement de 5 mm ou moins (environ 2,5 mm de chaque côté de la ligne médiane) comme satisfaisante.
(Basculement prononcé): une force légère est appliquée sur les premières molaires simultanément aux côtés droit et gauche. Essayez de pencher en direction antéro-postérieure avec le pouce et l'index placés en arrière et en avant simultanément et jugez de la présence ou l'absence d'un mouvement de bascule prononcé.

Stabilité de la prothèse inférieure
(Déplacement): L'ouverture buccale est de 20 mm et la langue est en position de repos. L'assise prothétique est vérifiée avec les doigts.
(Mouvement prononcé): Le patient est invité à bouger sa langue de manière que la pointe repose doucement au niveau des angles de la bouche, celle-ci est ouverte de 20 mm. Vérifiez l'assise de la prothèse avec les doigts. Le jugement est fait au troisième essai.
(Le mouvement antéropostérieur): la prothèse supérieure est déposée. La prothèse inférieure est maintenue sur la crête avec un doigt et le pouce sur les incisives et une tentative est faite pour déplacer la prothèse avec la langue en position de repos.

Niveau d'hygiène [5]

TISSUS MOUS:

Longueur de la lèvre supérieure[6-9]

Favorable: Normale
Défavorable:
A) Longue: une lèvre longue découvre très peu les dents antérieures.
B) Courte: une lèvre supérieure courte affiche la base prothétique

Salive[7-10]

Classe I: Normale en quantité et en qualité.
Classe II: Insuffisante, xérostomie.
Classe III: Abondante et très visqueuse.

Voile du palais[6, 9, 10]

Classe I: Idéal pour la rétention. (le voile du palais est presque horizontal. Plus de 5mm de tissus mobiles disponibles pour l'endiguement postérieur).
Classe II: Une bonne rétention est généralement possible. (le voile du palais s'incline vers le bas en formant un angle de 45^0 avec le palais dur. 1 à 5 mm de tissus mobiles disponibles pour l'endiguement postérieur).
Classe III: La rétention est généralement faible. (le voile du palais s'incline vers le bas en formant un angle de 75^0 avec le palais dur. Moins de 1 mm de tissus mobiles disponibles pour l'endiguement postérieur).

Insertions freinales[10]

Classe 1: Haute au maxillaire ou basse à la mandibule tout en respectant le sommet de la crête.
Classe 2: Moyenne
Classe 3: Le frein empiète sur le sommet de la crête et peut interférer avec le joint prothétique. Une correction chirurgicale peut être nécessaire.

Langue

Position de la langue (Classification selon Wright)
Normale: La langue occupe le plancher buccal et est délimitée par les dents mandibulaires.
Classe I: La langue est rétractée. Le plancher de la bouche est tiré vers le bas et s'expose en arrière dans la région molaire.
Classe II: la langue est très tendue, tirée vers l'arrière et enroulée vers le haut.

Taille de la langue[10] (Classification selon House)
Classe I: Taille, développement et fonction normaux; les dents sont présentes en nombre suffisant pour maintenir une forme et une fonction normales.
Classe II: Les dents ont été absentes assez longtemps pour entrainer un changement de forme et de fonction.
Classe III: Langue excessivement large. Toutes les dents ont été absentes pour une longue période autorisant un développement anormal de la taille de la langue.

Insertion musculaire à la mandibule[11]

Type A: Base d'insertion muqueuse sans empiètement musculaire excessif durant le fonctionnement normal dans toutes les régions.	**Type B:** Base d'insertion muqueuse dans toutes les régions excepté au vestibule labial. L'insertion du muscle mentonnier est proche du sommet de la crête alvéolaire.
Type **C**: Base d'insertion muqueuse dans toutes les régions excepté les vestibules antérieurs buccal et lingual de canine à canine. L'insertion du muscle génio-glosse et du muscle mentonnier est proche du sommet de la crête alvéolaire.	Type **D:** Base d'insertion muqueuse uniquement dans la région linguale postérieure. La base muqueuse dans toutes les autres régions est détachée.
Type **E:** Pas de muqueuse attachée dans toutes les régions	

État de la muqueuse[12]

Code	Description	Définition
1	Pas d'anomalies de la muqueuse	
2	Chéilite angulaire	Inflammation et fissures au niveau des angles ou des commissures labiales
3	Plaques blanches de la muqueuse	Zones blanches sur la muqueuse tel que le lichen plan , leucoplasie , candidose ou muguet.
4	Stomatite prothétique **Classification de Bergendal and Isacsson** [13, 14] Degré 0: muqueuse rosâtre normale Degré 1: érythème léger Degré 2: érythème sévère **Classification de Newton** [15] Classe I: Hyperémie localisée: des zones d'inflammation localisées dans un tissu palatin normal, qui se trouvent généralement autour des orifices des conduits des glandes muqueuses palatines. Classe II: Hyperémie diffuse: inflammation généralisée de la région de support de la prothèse dentaire. Classe III: Granulaire : surface palatine hyperplasique, qui pourrait être généralisée ou restreinte aux régions médianes.	Inflammation sous-prothétique
5	Ulcération aphteuse	Ulcération qui est passagère et douloureuse
6	Hyperplasie d'origine prothétique (épulis)	Tissu hyperplasique associé au bord prothétique
7	Hyperkératose	L'épaississement d'une zone de l'épithélium de la bouche
8	Ulcération traumatique ou non spécifique	Ulcération d'origine inconnue incluant les lésions traumatiques.
9	Glossite	Inflammation de la langue. Ceci devrait exclure la langue géographique.
10	Autres-Précisez	États de la muqueuse qui ne sont pas mentionnés dans ce tableau (fistule, sinus, …….)

TISSU OSSEUX

Relation maxillo- mandibulaire [11]

Classe I (la plus favorable): La relation maxillo- mandibulaire autorise une position dentaire en occlusion normale, les dents étant supportées par la crête résiduelle.

Classe II: La relation maxillo-mandibulaire requiert une position dentaire en dehors du rapport inter crête normal pour pouvoir assurer l'esthétique, la phonétique et l'occlusion. (Ex : les dents antérieures ou postérieures ne sont pas supportées par la crête résiduelle; le chevauchement antérieur vertical et/ou horizontal dépasse les critères de l'occlusion entièrement balancée).

Classe III: La relation maxillo-mandibulaire requiert une position dentaire en dehors du rapport inter crête normal pour pouvoir assurer l'esthétique, la phonétique et l'occlusion. (Ex. Les dents en articulé croisé antérieur ou postérieur ne sont pas supportées par la crête résiduelle).

Espace inter-arche[7, 8]

Favorable:
Classe I: Espace inter-arche idéal

Défavorable:
Classe II: Espace inter- arche excessif entrainant de faibles stabilité et rétention prothétiques.
Classe III: Espace inter-arche limité. Un espace inter-arche insuffisant pour accueillir les dents artificielles renforce la stabilité des prothèses tant que la surface occlusale des dents est proche de la crête en réduisant l'effet de levier, mais diminue la rétention.

ATM[16, 17]

Symptômes
Êtes-vous conscient de serrer des dents?
Êtes-vous conscient de grincer des dents?
Ressentez vous de la fatigue ou de la tension au niveau des muscles du visage ou de la mastication?
Ressentez-vous la douleur lors de l'ouverture ou de fermeture buccale?
Avez-vous de maux de tête ou des migraines ?

Signes
Claquement et /ou crépitation durant le mouvement de la mâchoire.
Limitation de l'ouverture buccale
palpation latérale et postérieure de l'ATM en mouvement.
Déviation de la mandibule sur ouverture de la bouche

Hauteur de la crête résiduelle[11]

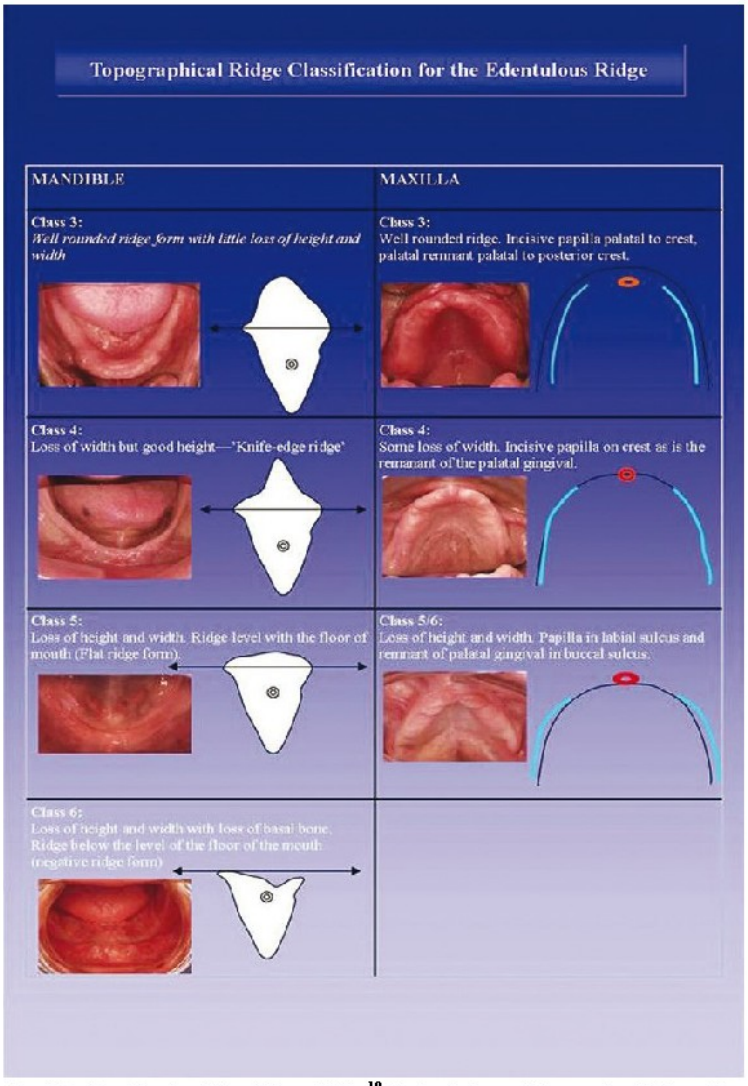
Type I: 21mm ou plus (la plus favorable), la hauteur de l'os résiduel est de 21mm mesurée à la plus faible hauteur verticale de la mandibule. Type II: 16-20mm, la hauteur de l'os résiduel est de 16 à 20 mm mesurée à la plus faible hauteur verticale de la mandibule. Type III: 11-15mm, la hauteur de l'os résiduel est de 11 à 15 mm mesurée à la plus faible hauteur verticale de la mandibule. Type IV: 10mm ou moins, la hauteur de l'os résiduel est de 10 mm ou moins, mesurée à la plus faible hauteur verticale de la mandibule.

Résorption de l'os alvéolaire [18-21]

Mandible	**Maxillaire**
Classe1:Dentée Classe2: Post extraction Classe 3: Forme bien arrondie de la crête avec peu de perte de hauteur et de largeur. Classe 4: Perte de largeur, mais une bonne hauteur- " crête en lame de couteau ". Classe 5: Perte de hauteur et de largeur. Le niveau de la crête est au plancher buccal. (crête de forme plate) Classe 6: Perte de hauteur et de largeur avec une perte de l'os basal. Crête en dessous du niveau du plancher buccal. (crête de forme négative)	Classe 1:Denté Classe 2: Post extraction Classe 3: Forme bien arrondie de la crête. La papille rétro incisive est au palatin de la crête, le reste de la gencive palatine est au palatin de la crête osseuse postérieure. Classe 4: quelque perte en largeur. la papille incisive est sur la crête ainsi que le reste de la gencive palatine. Classe 5/6: perte de hauteur et de largeur. La papille est dans le sulcus labial et le reste de la gencive palatine est dans le sulcus buccal.

Examen radiologique [22-24]

Quantité d'os	**Qualité de l'os**
A: La majorité de l'os alvéolaire est présent. B: La résorption de l'os alvéolaire est modérée C: La résorption de l'os alvéolaire est avancée . Seulement l'os basal est présent. D: Faible résorption de l'os basal. E: Résorption extrême de l'os basal.	Qualité 1: Presque toute la mâchoire est composée d'os compact homogène. Qualité 2: Une couche épaisse d'os compact entoure un noyau d'os trabéculaire dense. Qualité 3: Une couche fine d'os cortical entoure un noyau d'os trabéculaire dense. Qualité 4: Une couche fine d'os cortical entoure un noyau d'os trabéculaire peu dense.



Classification for the Edentulous Ridge[19] (Adaptation of Cawood and Howell's classification[18])

1. Anastassiadou V, Naka O, Heath MR, Kapari D. Validation of indices for functional assessment of dentures. Gerodontology 2002;19(1):46-52.
2. Anastassiadou V, Robin Heath M. The effect of denture quality attributes on satisfaction and eating difficulties. Gerodontology 2006;23(1):23-32.
3. Marcus M, Koch AL, Gershen JA. A proposed index of oral health status: a practical application. J Am Dent Assoc 1983;107(5):729-33.
4. Corrigan PJ, Basker RM, Farrin AJ, Mulley GP, Heath MR. The development of a method for functional assessment of dentures. Gerodontology 2002;19(1):41-5.
5. Emami E, Séguin J, Rompré P, et al. The relationship of myceliated colonies of Candida albicans with denture stomatitis: an in vivo/in vitro study. The International journal of prosthodontics 2007;20(5):514.
6. Olivier Hüe M-VB. Prothèse complète réalité clinique, solutions thérapeutiques,Quintessence International,Paris,. 2004,chapitre 4.
7. Maller SV, Karthik, KS, Maller, U.S. A Review on Diagnosis and Treatment Planning for Completely Edentulous Patients.
8. Chiramanaa S, Ka A. Examination, Diagnosis and Treatment Planning for Complete Denture Therapy – A Review.
9. Sheldon. W. Essentials Of Complete Denture Prosthodontics,second edition,PSG publishing company,INC.Littleton, Massachusetts.; 1988,page:48.
10. House M. The relationship of oral examination to dental diagnosis. The Journal of Prosthetic Dentistry 1958;8(2):208-19.
11. McGarry TJ, Nimmo A, Skiba JF, et al. Classification system for complete edentulism. Journal of Prosthodontics 1999;8(1):27-39.
12. StatisticsCanada. Canadian Health Measures Survey. http://www.statcan.gc.ca/concepts/hs-es/measures-mesures-fra.htm 2008.
13. Bergendal T, Isacsson G. Effect of nystatin in the treatment of denture stomatitis. Scand J Dent Res 1980;88(5):446-54.
14. Bergendal T, Isacsson G. A combined clinical, mycological and histological study of denture stomatitis. Acta Odontol Scand 1983;41(1):33-44.
15. Newton A. Denture sore mouth: A possible aetiology. Br Dent J 1962;112:357-60.
16. Gesch D, Bernhardt O, Alte D, et al. Prevalence of signs and symptoms of temporomandibular disorders in an urban and rural German population: results of a population-based Study of Health in Pomerania. Quintessence Int 2004;35(2):143-50.
17. Heloe B, Heloe LA. The occurrence of TMJ -disorders in an elderly population as evaluated by recording of "subjective" and "objective" symptoms. Acta Odontol Scand 1978;36(1):3-9.
18. Cawood JI, Howell RA. Reconstructive preprosthetic surgery. I. Anatomical considerations. Int J Oral Maxillofac Surg 1991;20(2):75-82.
19. Stilwell C. Risk management in clinical practice. Part 6b. Identifying and avoiding medico-legal risks in removable dentures. British dental journal 2010;209(7):339-50.
20. Cawood JI, Howell RA. A classification of the edentulous jaws. Int J Oral Maxillofac Surg 1988;17(4):232-6.
21. Penhall B, Roder D, Esterman A. Increased tolerance to complete dentures after surgical modification of mylohyoid ridges. J Prosthet Dent 1985;54(2):230-2.
22. Lekholm U, Zarb GA. Patient selection and preparation. In: Brånemark PI, Zarb GA, Albrektsson T, editors Tissue-integrated prostheses: osseointegration in clinical dentistry. : Chicago: Quintessence Publishing Co.; 1985. p. 199–209.
23. Albrektsson T, Wennerberg A. The impact of oral implants - past and future, 1966-2042. J Can Dent Assoc 2005;71(5):327.
24. Norton MR, Gamble C. Bone classification: an objective scale of bone density using the computerized tomography scan. Clin Oral Implants Res 2001;12(1):79-84.

APPENDIX VI: ANNEXE PROTHÈSE PARTIELLE AMOVIBLE

ANNEXE: PROTHÈSE PARTIELLE AMOVIBLE

Classification de Kennedy [1-4]

Classe I: Zones édentées bilatérales situées postérieurement par rapport aux dents naturelles restantes.
Classe II: Zone édentée unilatérale située postérieurement par rapport aux dents naturelles restantes.
Classe III: Édentement intercalaire de tout type (sauf antérieur unique)
Classe IV: Édentement antérieur avec un seul segment édenté et traversant la ligne médiane.
Classe V: une situation édentée dans laquelle les dents sont présentes antérieurement et postérieurement mais la délimitation antérieure n'est pas adaptée pour une fonction d'appui (telle que l'incisive latérale).
Classe VI: une situation édentée dans laquelle les dents limites sont capables d'assurer le support total de la prothèse requise.

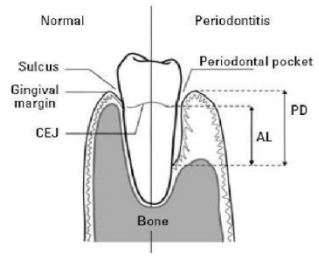
Évaluation de la prothèse partielle actuelle[5, 6]

Rétention de la prothèse La rétention est classé comme "excellente" (résistance au déplacement vertical); "bonne" (une résistance modérée au déplacement vertical), ou "mauvaise" (pas de résistance au déplacement vertical).
Stabilité de la prothèse La stabilité est classé comme "excellente" (stable au mouvement de rotation et les appuis occlusaux sont ajustés); "bonne" (stable, mais certains appuis sont pas ajustés), ou "mauvaise" (déplacée par mouvement rotationnel).
Châssis métallique Le châssis métallique est classé comme "bien ajusté", "Adaptation des appuis occlusaux et crochets inacceptable" ou "fracturés".
Adaptation de la base acrylique à la muqueuse L'adaptation de la base acrylique à la muqueuse est classé comme "bien ajustée", " légère imprécision" ou " adaptation inacceptable".

IP (Indice de plaque)[7, 8]

0= Pas de plaque
1= une pellicule de plaque adhérente à la gencive marginale libre et à la surface dentaire adjacente. La plaque pourrait être révélée par l'usage de la sonde sur la surface dentaire.
2= Accumulation modérée de dépôts mous dans la poche gingivale, ou sur la dent et la gencive marginale qui pourrait être vus à l'œil nu.
3= Abondance de matière molle dans la poche gingivale, ou sur la dent et la gencive marginale.

PP (Profondeur de poches)[9] **:**Score du Sondage (Profondeur en millimètres). Il est mesuré à partir du bord de la gencive à la base de la poche clinique.



SAS (Saignement au sondage)[10]

0= Pas de saignement

1= Saignement

Carie[11-14]

1. Surface saine: Toute surface ne présentant ni caries ni obturations.
2. Lésion active: Toute surface bien définie et qui présente une décoloration jaunâtre ou brun clair. La lésion est ramollie ou de consistance coriace lorsqu'elle est sondée avec une pression modérée et peut être recouverte de plaque.
3. Lésion inactive: Toute surface bien définie, noir brunâtre ou noire. La surface est lisse, brillante et dure au sondage.
4. Surface obturée: considérée principalement comme le résultat du traitement. Les récidives de caries sont marquées comme des caries actives.
5. Surface délabrée: Elle se définit comme suit: surface dentaire entièrement détruite et totalement absente. Lorsque cinq ou plusieurs surfaces sont détruites, la dent est considérée comme un fragment radiculaire.

Mobilité dentaire[15, 16]

0=Pas de mobilité
1= Jusqu'à 1 mm de mouvement dans le sens horizontal.
2= Plus de 1 mm de mouvement dans le sens horizontal.
3= Mouvement horizontal et vertical excessifs.

Structure des dents piliers[17]

État du pilier idéal ou peu compromis. ❒Pas de traitement pré prothétique indiqué.
État du pilier modérément compromis. ❒ Piliers dans 1 ou 2 sextants* ont une structure dentaire insuffisante pour retenir ou supporter des restaurations intracoronaires ou extracoronaires. ❒ Piliers dans 1 ou 2 sextants requièrent un traitement adjuvant localisé (e.g. , parodontal, endodontique, ou procédures orthodontiques).
État du pilier considérablement compromis. ❒ Piliers dans 3 sextants ont une structure dentaire insuffisante pour retenir ou supporter des restaurations intracoronaires ou extracoronaires. ❒ Piliers dans 3 sextants requièrent davantage de traitements localisés considérables (e.g. , parodontal, endodontique, ou procédures orthodontiques).
État du pilier sévèrement compromis. ❒ Piliers dans 4 sextants ou plus ont une structure dentaire insuffisante pour retenir ou supporter des restaurations intracoronaires ou extracoronaires. ❒ Piliers dans 4 sextants ou plus requièrent un traitement adjuvant localisé (e.g. , parodontal, endodontique, ou procédures orthodontiques). ❒ Piliers ont un pronostic réservé.

* Un sextant est une subdivision de l'arcade dentaire. Les arcades dentaires maxillaire et mandibulaire pourraient être subdivisées en six zones ou sextants. Dans le maxillaire supérieur, le sextant postérieur droit s'étend de la dent 14 à la dent 18, le sextant postérieur gauche s'étend de la dent 24 à la dent 28, et le sextant antérieur s'étend de la dent 13 à la dent 23. A la mandibule, le sextant postérieur droit s'étend de la dent 44 à la dent 48, le sextant postérieur gauche s'étend de la dent 34 à la dent 38, et le sextant antérieur s'étend de la dent 33 à la dent 43.

Maxillaire				
Dents	18-14	13-23	24-28	
Droite				Gauche
Dents	48-44	43-33	34-38	
Mandibule				

Occlusion[17]

Types de malformations de la crête[18] (classification de Seibert)

1. Santoni P. Maîtriser la prothèse amovible partielle: Editions CDP; 2004.
2. Kennedy E. Partial denture construction. Dent Items Interest. 1928;1:3-8.
3. Ulmer FC, Jr. Kennedy-Applegate classification of partially edentulous dental arches. NADL J 1983;30(3):37-40.
4. Applegate OC. Essentials of Removable Partial Denture Prosthesis: 3rd ed ,W. B.Saunders Company,Philadelphia; 1965.
5. Benson D, Spolsky VW. A clinical evaluation of removable partial dentures with I-bar retainers. Part I. J Prosthet Dent 1979;41(3):246-54.
6. Cosme DC, Baldisserotto SM, Fernandes Ede L, et al. Functional evaluation of oral rehabilitation with removable partial dentures after five years. J Appl Oral Sci 2006;14(2):111-6.
7. Greene JC, Vermillion JR. The simplified oral hygiene index J Am Dent Assoc 1964;68:7-13.
8. Loe H. The Gingival Index, the Plaque Index and the Retention Index Systems. J Periodontol 1967;38(6):Suppl:610-6.
9. Ramfjord SP. The Periodontal Disease Index (PDI). J Periodontol 1967;38(6):Suppl:602-10.
10. Carter HG, Barnes GP. The Gingival Bleeding Index. J Periodontol 1974;45(11):801-5.
11. Drake CW, Beck JD. Models for coronal caries and root fragments in an elderly population. Caries Res 1992;26(5):402-7.
12. Guivante-Nabet C, Tavernier JC, Trevoux M, Berenholc C, Berdal A. Active and inactive caries lesions in a selected elderly institutionalised French population. Int Dent J 1998;48(2):111-22.
13. Guivante-Nabet C, Berenholc C, Berdal A. Caries activity and associated risk factors in elderly hospitalised population--15-months follow-up in French institutions. Gerodontology 1999;16(1):47-58.
14. Fejerskov O, Luan WM, Nyvad B, Budtz-Jorgensen E, Holm-Pedersen P. Active and inactive root surface caries lesions in a selected group of 60- to 80-year-old Danes. Caries Res 1991;25(5):385-91.
15. Miller SC, editor. Text Book of Periodontia: Philadelphia: The Blakiston Company; 1938.
16. Bergman B, Hugoson A, Olsson CO. Periodontal and prosthetic conditions in patients treated with removable partial dentures and artificial crowns. A longitudinal two-year study. Acta Odontol Scand 1971;29(6):621-38.
17. McGarry TJ, Nimmo A, Skiba JF, et al. Classification system for partial edentulism. Journal of Prosthodontics 2002;11(3):181-93.
18. Seibert J, DW C. Periodontal considerations in preparation for fixed and removable prosthodontics. Dent Clin North Am. 1987;31(3):529-55.

APPENDIX VII: ANNEXE QUESTIONNAIRE#1 ET QUESTIONNAIRE SUR LES RÉSULTATS

ANNEXE: QUESTIONNAIRE#1

Section B: Modes de vie[1]

Section C: Antécédents médicaux[2-21]

Section F: Anxiété dentaire [22, 23]

Section G: Caractéristiques psychologiques[24, 25]

ANNEXE: QUESTIONNAIRE SUR LES EFFETS

Section A: Qualité de vie

A.1. En général, diriez-vous que votre santé est[26, 27]?

A.2. En général, diriez-vous que la santé de votre bouche est[28, 29]?

A.3. OHIP-EDENT [30]

A.4. Durant les 12 derniers mois, vous absentiez-vous du travail ou de vos activités normales en raison de la nécessité d'avoir des soins dentaires, y compris des examens dentaires, ou à cause de soucis avec votre bouche[31]?

Section B: La satisfaction du patient

(**B.1._B.7.**[32, 33])

B.1. En général, comment est votre satisfaction concernant votre prothèse supérieure?

B.2. En général, comment est votre satisfaction concernant votre prothèse inférieure?

B.3. Comment est votre satisfaction concernant la rétention de votre prothèse supérieure?

B.4. Comment est votre satisfaction concernant la rétention de votre prothèse inférieure?

B.5. Comment est votre satisfaction concernant le confort fonctionnel de vos prothèses?

B. 6. Comment est votre satisfaction concernant l'aspect de vos prothèses?

B.7. Comment est votre satisfaction concernant la parole avec vos prothèses?

(**B.8._B.11**.[34, 35])

B.8. Ressentez-vous un déplacement de la prothèse supérieure en mangeant et/ou en parlant?

B.9. Ressentez-vous un déplacement de la prothèse inférieure en mangeant et/ou en parlant?

B.10. Avez-vous des problèmes à mordre avec vos prothèses?

B.11. Avez-vous des problèmes à mâcher avec vos prothèses?

(**B.12._B.14.**[36, 37])

B.12. Trouvez-vous des particules alimentaires sous vos prothèses?

B.13. Ressentez-vous une différence de goût des aliments à cause de vos prothèses?

B.14. Est-ce que la prothèse influence votre choix d'aliments?

(**B.15._B.18.**[38])

B.15. Avez-vous de la difficulté à nettoyer vos prothèses?

B.16. Ressentez-vous une mauvaise haleine à cause de vos prothèses?

B.17. Ressentez-vous une sécheresse buccale?

B.18. Avez-vous des problèmes d'hypersialorrhée (hypersalivation) ?

Section C: Attentes de satisfaction à l'égard de la prothèse totale

C.1. Quelle serait votre satisfaction avec de nouvelles prothèses totales conventionnelles[39]?

Section D: Satisfaction par la visite dentaire[40, 41]

1. Milton K, Bull F, Bauman A. Reliability and validity testing of a single-item physical activity measure. British Journal of Sports Medicine 2011;45(3):203.
2. Atwood DA. Some clinical factors related to rate of resorption of residual ridges. 1962. J Prosthet Dent 2001;86(2):119-25.
3. Jeffcoat MK, Chesnut CH, 3rd. Systemic osteoporosis and oral bone loss: evidence shows increased risk factors. J Am Dent Assoc 1993;124(11):49-56.
4. Xie Q, Ainamo A, Tilvis R. Association of residual ridge resorption with systemic factors in home-living elderly subjects. Acta Odontol Scand 1997;55(5):299-305.
5. Xie Q, Narhi TO, Nevalainen JM, Wolf J, Ainamo A. Oral status and prosthetic factors related to residual ridge resorption in elderly subjects. Acta Odontol Scand 1997;55(5):306-13.
6. Xie Q, Wolf J, Tilvis R, Ainamo A. Resorption of mandibular canal wall in the edentulous aged population. J Prosthet Dent 1997;77(6):596-600.
7. Ghezzi EM, Ship JA. Systemic diseases and their treatments in the elderly: impact on oral health. J Public Health Dent 2000;60(4):289-96.
8. Ship JA, Chavez EM. Management of systemic diseases and chronic impairments in older adults: oral health considerations. Gen Dent 2000;48(5):555-65.
9. Baylink DJ, Wergedal JE, Yamamoto K, Manzke E. Systemic factors in alveolar bone loss. J Prosthet Dent 1974;31(5):486-505.
10. Carlsson GE. Clinical morbidity and sequelae of treatment with complete dentures. J Prosthet Dent 1998;79(1):17-23.
11. Kapur KK, Garrett NR, Hamada MO, Roumanas ED, Freymiller E, Han T, et al. A randomized clinical trial comparing the efficacy of mandibular implant-supported overdentures and conventional dentures in diabetic patients. Part I: Methodology and clinical outcomes. J Prosthet Dent 1998;79(5):555-69.
12. Blanchet PJ, Rompre PH, Lavigne GJ, Lamarche C. Oral dyskinesia: a clinical overview. Int J Prosthodont 2005;18(1):10-9.
13. Seymour RA. Dental pharmacology problems in the elderly. Dent Update 1988;15(9):375-81.
14. Pazianas M, Miller P, Blumentals WA, Bernal M, Kothawala P. A review of the literature on osteonecrosis of the jaw in patients with osteoporosis treated with oral bisphosphonates: prevalence, risk factors, and clinical characteristics. Clin Ther 2007;29(8):1548-58.
15. Silverman SL, Landesberg R. Osteonecrosis of the jaw and the role of bisphosphonates: a critical review. Am J Med 2009;122(2 Suppl):S33-45.
16. Khosla S, Burr D, Cauley J, Dempster DW, Ebeling PR, Felsenberg D, et al. Bisphosphonate-associated osteonecrosis of the jaw: report of a task force of the American Society for Bone and Mineral Research. J Bone Miner Res 2007;22(10):1479-91.
17. Felton D, Cooper L, Duqum I, Minsley G, Guckes A, Haug S, et al. Evidence Based Guidelines for the Care and Maintenance of Complete Dentures: A Publication of the American College of Prosthodontists. Journal of Prosthodontics 2011;20:S1-S12.
18. Klemetti E, Kroger H, Lassila L. Fluoridated drinking water, oestrogen therapy and residual ridge resorption. J Oral Rehabil 1997;24(1):47-51.
19. Cochran DL, Morton D, Weber HP. Consensus statements and recommended clinical procedures regarding loading protocols for endosseous dental implants. Int J Oral Maxillofac Implants 2004;19 Suppl:109-13.
20. Bornstein MM, Cionca N, Mombelli A. Systemic conditions and treatments as risks for implant therapy. Int J Oral Maxillofac Implants 2009;24 Suppl:12-27.
21. Scully C, Hobkirk J, Dios PD. Dental endosseous implants in the medically compromised patient. J Oral Rehabil 2007;34(8):590-9.
22. Corah NL. Development of a dental anxiety scale. J Dent Res 1969;48(4):596.
23. Newton JT, Buck DJ. Anxiety and pain measures in dentistry: a guide to their quality and application. J Am Dent Assoc 2000;131(10):1449-57.

24. Denollet J. DS14: standard assessment of negative affectivity, social inhibition, and Type D personality. Psychosom Med 2005;67(1):89-97.
25. Martens EJ, Kupper N, Pedersen SS, Aquarius AE, Denollet J. Type-D personality is a stable taxonomy in post-MI patients over an 18-month period. J Psychosom Res 2007;63(5):545-50.
26. Cunny KA, Perri M, 3rd. Single-item vs multiple-item measures of health-related quality of life. Psychol Rep 1991;69(1):127-30.
27. de Boer AG, van Lanschot JJ, Stalmeier PF, van Sandick JW, Hulscher JB, de Haes JC, et al. Is a single-item visual analogue scale as valid, reliable and responsive as multi-item scales in measuring quality of life? Qual Life Res 2004;13(2):311-20.
28. John MT, Reissmann DR, Allen F, Biffar R. The short-term effect of prosthodontic treatment on self-reported oral health status: the use of a single-item questionnaire. Int J Prosthodont 2007;20(5):507-13.
29. Locker D, Mscn EW, Jokovic A. What do older adults' global self-ratings of oral health measure? J Public Health Dent 2005;65(3):146-52.
30. Allen F, Locker D. A modified short version of the oral health impact profile for assessing health-related quality of life in edentulous adults. Int J Prosthodont 2002;15(5):446-50.
31. StatisticsCanada. Canadian Health Measures Survey. http://www.statcan.gc.ca/concepts/hs-es/measures-mesures-fra.htm 2008.
32. Vervoorn JM, Duinkerke ASH, Luteijn F, Poel A. Assessment of denture satisfaction. Community Dentistry and Oral Epidemiology 1988;16(6):364-67.
33. Boerrigter EM, Geertman ME, Van Oort RP, Bouma J, Raghoebar GM, van Waas MA, et al. Patient satisfaction with implant-retained mandibular overdentures. A comparison with new complete dentures not retained by implants--a multicentre randomized clinical trial. Br J Oral Maxillofac Surg 1995;33(5):282-8.
34. Anastassiadou V, Katsouli S, Heath MR, Pissiotis A, Kapari D. Validation of communication between elderly denture wearers and dentists: a questionnaire on satisfaction with complete dentures using semi-structured interviews. Gerodontology 2004;21(4):195-200.
35. Anastassiadou V, Robin Heath M. The effect of denture quality attributes on satisfaction and eating difficulties. Gerodontology 2006;23(1):23-32.
36. Garrett NR, Kapur KK, Perez P. Effects of improvements of poorly fitting dentures and new dentures on patient satisfaction. J Prosthet Dent 1996;76(4):403-13.
37. Kapur KK, Garrett NR, Hamada MO, Roumanas ED, Freymiller E, Han T, et al. Randomized clinical trial comparing the efficacy of mandibular implant-supported overdentures and conventional dentures in diabetic patients. Part III: comparisons of patient satisfaction. J Prosthet Dent 1999;82(4):416-27.
38. Garrett N, Roumanas ED, Blackwell KE, Freymiller E, Abemayor E, Wong WK, et al. Efficacy of conventional and implant-supported mandibular resection prostheses: study overview and treatment outcomes. J Prosthet Dent 2006;96(1):13-24.
39. Heydecke G, Thomason JM, Awad MA, Lund JP, Feine JS. Do mandibular implant overdentures and conventional complete dentures meet the expectations of edentulous patients? Quintessence Int 2008;39(10):803-9.
40. Corah NL, O'Shea RM, Pace LF, Seyrek SK. Development of a patient measure of satisfaction with the dentist: the Dental Visit Satisfaction Scale. J Behav Med 1984;7(4):367-73.
41. Sun N, Burnside G, Harris R. Patient satisfaction with care by dental therapists. Br Dent J 2010;208(5):E9; discussion 212-3.