

Development of an Evidence-Based Prosthodontic Record: An Action Research Study

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This study sought to develop a database in the field of removable prosthodontics by using a participatory action research method. Data collection consisted of a comprehensive literature review, focus-group discussions, and interviews. Applying action research methods ensures consideration of the needs, perspectives, and expertise of academia in the design and implementation of an evidence/research-based patient record, and academic educators are well placed to conduct such research. *Int J Prosthodont* 2013;26:359–364. doi: 10.11607/ijp.3397

Although the importance of practice-based research has been widely documented, this process advances slowly and faces several barriers, such as validity of the evidence and high costs of providing clinical data.¹ Therefore, strategies need to be implemented that allow powerful data queries on large pools of patient data with relatively low cost and without information and measurement bias. In the field of prosthodontic research, as for other research domains, a university-based dataset can facilitate this process. To this aim, a participatory action research method that links researchers and clinicians synergistically to evaluate and change practices can be appropriate.^{2,3} This study briefly describes the approach of creating an evidence-based patient record in the field of removable prosthodontics. Ultimately, this record could be used to provide the basic elements of a prosthodontic database.

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Materials and Methods

The study was approved by the Ethics Committee of the Université de Montréal, and informed written consent was obtained from each participant. A participatory action research design and the purposive sampling technique were used to select study participants (Table 1).^{2–4}

Data were collected during the different phases of the action research cycle (Fig 1). In the first phase, “problem identification,” six focus-group discussions and 13 individual interviews were conducted to develop the criteria for designing the new patient record.

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.

In the next phases, “action planning/acting on the evidence,” the new prosthodontic record was designed based on the results of the previous phases. Finally, in the last phases, “action evaluation/interpretation,” the completeness and appropriateness of the new prosthodontic record was assessed and necessary modifications were carried out.

The analysis included debriefing, transcription, and thematic analysis.⁵ The interviews and focus groups were all audio-recorded, transcribed verbatim, and coded using computer qualitative software (QDA Miner version 3.2.3, Provalis Research).

Results

The thematic analysis of the collected data yielded several key concepts that are summarized below.

Table 1 The Demographic and Academic Characteristics of Study Participants (n = 14)

Participants	Total
Sex	
Male	9
Female	5
Academic status	
Full-time professor in removable prosthodontics	5
Part-time clinician in removable prosthodontics	9
Age	
30 to 40 y	4
41 to 50 y	6
≥ 51 y	4
Teaching experience	
< 10 y	1
10 to 20 y	4
21 to 30 y	6
> 30 y	3

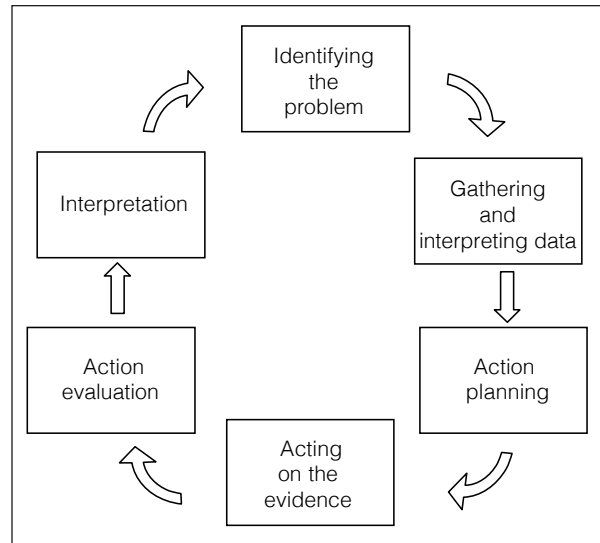


Fig 1 Action research cycle model (adapted from Susman⁷).

Table 2 The Content of the Newly Designed Evidence-Based Prosthodontic Record and Related Questionnaires

Prosthodontic record	
Part 1:	
Assessment of potential risk factors of prosthodontic outcomes	Sociodemographic characteristics, medical and dental history, lifestyle habits, dental service use, oral hygiene habits, dental anxiety, and psychological characteristics
Part 2:	
Oral clinical examinations and assessment of disease-oriented outcomes	Evaluation of current denture, soft and hard tissues, caries, periodontal diseases, denture stomatitis, and alveolar bone resorption
Part 3:	
Assessment of patient-oriented outcomes	Oral health-related quality of life, patient satisfaction, and dental visit satisfaction

Enthusiasm to Change

This theme was evident when the professors and clinical instructors demonstrated their willingness to collaborate in the process.

Empowerment in Practice, Education, and Research

Three types of weaknesses in the current prosthodontic record were identified. (1) Clinical weaknesses: for most interviewees, the actual clinical form did not allow for patient follow-up or for conducting clinical audits. In addition, the participants 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. (3) Research weaknesses: the clinical researchers stated that the existing record was solely clinical.

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.

Expanding Knowledge

Based on an extensive systematic review, the important outcomes of interest in removable prosthodontic research and their data collection instruments were selected and the new research-based prosthodontic record was developed in the action planning phase and evaluated by the research team in the action evaluation and interpretation phases (Table 2, Appendices I to IV).

Appendix I: Part of Questionnaire no. 1

H.7. How many pairs of your posterior (back) natural teeth in the right side get in touch during chewing?

0 1 2 3 4 5

H.8. How many pairs of your posterior (back) natural teeth in the left side get in touch during chewing?

0 1 2 3 4 5

Before answering the following questions, please pay attention to these definitions:

Partial denture: a removable prosthesis with artificial teeth that replace some of your teeth in the upper and/or lower jaw.



Complete denture: a removable prosthesis with artificial teeth that replace all of your teeth in the upper and/or lower jaw.



H.9. Do you wear a denture? Yes (If yes, please go to the next question) No

H.10. Please choose the best response for the next questions and answer in the table below.

- A) Approximately when did you start wearing a denture? B) Which kind?
 C) Which jaw? D) Please mention if you were wearing it/them during mastication.

A: Age	B: Type of denture	C: Jaw	D: Wearing during mastication
<input type="checkbox"/> Between 20–34	<input type="checkbox"/> Complete denture <input type="checkbox"/> Partial denture	<input type="checkbox"/> Upper <input type="checkbox"/> Lower <input type="checkbox"/> Both <input type="checkbox"/> Non applicable	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Between 35–49	<input type="checkbox"/> Complete denture <input type="checkbox"/> Partial denture	<input type="checkbox"/> Upper <input type="checkbox"/> Lower <input type="checkbox"/> Both <input type="checkbox"/> Non applicable	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Between 50–64	<input type="checkbox"/> Complete denture <input type="checkbox"/> Partial denture	<input type="checkbox"/> Upper <input type="checkbox"/> Lower <input type="checkbox"/> Both <input type="checkbox"/> Non applicable	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> 65 and older	<input type="checkbox"/> Complete denture <input type="checkbox"/> Partial denture	<input type="checkbox"/> Upper <input type="checkbox"/> Lower <input type="checkbox"/> Both <input type="checkbox"/> Non applicable	<input type="checkbox"/> Yes <input type="checkbox"/> No

Discussion

An evidence-based patient record has several advantages, such as monitoring dental care, facilitating clinical research, and allowing clinical audit in the university-based setting. Furthermore, it will create a research-training environment for clinicians and dental students. It will also raise awareness about evidence-based practice. Previously, 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.⁶ However, in terms of implementation, barriers could be expected, such as students' resistance toward the complexity of the design and lack of knowledge regarding the concept. The authors believe that by providing appropriate support and training these barriers could be resolved.

Appendix II: Part of Complete Removable Prosthesis Questionnaire

TREATMENT PLAN

A: preprosthetic

Conditions requiring preprosthetic surgery

Extraction

Minor soft tissue surgeries

Implant surgery

B: prosthetic

Suggested treatment (Please choose more than one, if several treatments are needed)

New prosthesis C/C C/ /C Implant-supported prosthesis

Reline Rebase Repair

PROGNOSIS

Influencing factors

	Favorable	Unfavorable
Anatomical factors	<input type="checkbox"/>	<input type="checkbox"/>
Underlying systematic disease	<input type="checkbox"/>	<input type="checkbox"/>
Orofacial problems (TMD symptoms....)	<input type="checkbox"/>	<input type="checkbox"/>
Psychosocial factors	<input type="checkbox"/>	<input type="checkbox"/>
Prosthesis history	<input type="checkbox"/>	<input type="checkbox"/>

	Good	Conditional	Poor
In general the prognosis is			
Max	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Conclusion

This study showed that the application of action research methods ensures consideration of the needs, perspectives, and expertise of academia in the design and implementation of an evidence/research-based patient record in the field of removable prosthodontics.

Acknowledgment

The authors reported no conflicts of interest related to this study.

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Appendix III: Part of Partial Removable Prosthesis Questionnaire

Evaluation of abutment teeth	
<p>Abutment tooth structure</p> <p><input type="checkbox"/> Ideal or minimally compromised abutments. (No preprosthetic therapy is indicated.)</p> <p><input type="checkbox"/> Moderately compromised abutments. (Abutments in 1 or 2 sextants have insufficient tooth structure to retain or support intracoronar or extracoronar restorations and they require localized adjunctive therapy.)</p> <p><input type="checkbox"/> Substantially compromised abutments. (Abutments in 3 or more sextants have insufficient tooth structure to retain or support intracoronar or extracoronar restorations and they require more substantial localized adjunctive therapy.)</p> <p><input type="checkbox"/> Severely compromised abutments. (Abutments in 4 or more sextants have insufficient tooth structure to retain or support intracoronar or extracoronar restorations and they require extensive adjunctive therapy. Abutments have guarded prognoses.)</p>	
Occlusion	
<p>Occlusal plan</p> <p><input type="checkbox"/> Adequate</p> <p><input type="checkbox"/> Minor occlusal adjustment</p> <p><input type="checkbox"/> Occlusal rehabilitation</p>	<p>OVD</p> <p><input type="checkbox"/> Adequate</p> <p><input type="checkbox"/> To modify: <input type="checkbox"/> To be increased</p> <p style="padding-left: 100px;"><input type="checkbox"/> To be reduced</p>
<p>Jaw relationship</p> <p><input type="checkbox"/> Class I</p> <p><input type="checkbox"/> Class II division <input type="checkbox"/> I <input type="checkbox"/> II</p> <p><input type="checkbox"/> Class III</p>	<p>Posterior support</p> <p><input type="checkbox"/> Adequate</p> <p><input type="checkbox"/> Inadequate</p>
Ridge deformities	
<p><input type="checkbox"/> Class I (buccolingual loss of tissue contour with a normal apicocoronar height)</p> <p><input type="checkbox"/> Class II (apicocoronar loss of tissue with normal buccolingual contour)</p> <p><input type="checkbox"/> Class III (a combination of buccolingual and apicocoronar loss)</p>	

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