



**University of Michigan – School of Dentistry  
Workshop:  
Getting your work published in the *JDE* – Part 3:  
*From the data to the publication***

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# Program description

- This workshop is designed for dental educators at the beginning of their publishing career who are interested in publishing their first educational research project.
- Part 1: From start to data collection
- Part 2: How to write an abstract for an educational research paper/poster
- ***Part 3: From the data to the publication***



**How many of you attended Workshop 1?**

**How many attended Workshop 2?**



# Needs assessment

- **What would you like to learn in this workshop?**
- **Are you working on / have you written an educational research publication?**
- **Where are you personally in your journey to your (first) next publication?**
  - **Do you have data already?**
  - **Did you already analyze the data?**
  - **Did you already start to write?**
  - **Did you submit a manuscript?**



# **This workshop is about**

- **Learning how to tell a story:**
- **Again – and again – and again – and again – and again – and again - and again**
- **In the title – in the abstract – in the background – in the methods – in the results – in the discussion – in the conclusion**



## Philosophers studying the philosophy of science tell us:

- Use a critical rationalistic approach
- Formulate hypothesis / es
- Collect data to test hypothesis / es
- If hypothesis supported: HOORAY!
- If hypothesis not supported / falsified:  
Throw away? Modify?
- How about in the real world?



## “WORK IN PROGRESS”

- **LATEST STAGE OF KNOWING NOTHING**
- **BUT A LITTLE MORE THAN BEFORE**
- **... and how do I share this “little more” with others?**



# Objectives – Part 3

- **Your title – Part 2**
- **Your abstract – Part 2**
- **Connecting your research with published research**
- **Your methods section**
- **Preparing tables and figures**
- **Your result section**
- **The essential elements of a good discussion section**
- **Conclusions**





# Step 1: Your title

- **It should be**
  - **concise (short) and**
  - **precise (tell what it is all about)**
- **It should inform the reader about**
  - **what your topic is and**
  - **from whom you collected which data and**
  - **what type of a study it is**
- **Example:**
  - **Exploring domestic abuse**
  - **Educating dental and dental hygiene students about domestic abuse**
  - **Educating dental and dental hygiene students about domestic abuse – Outcome assessment**



# ***Journal of Dental Education***

## **Examples from Oct. 2016 issue**

### ***Perspectives***

- **Preparing Dental Students and Residents to Overcome Internal and External Barriers to Evidence-Based Practice**
- **Improving a Dental School's Clinic Operations Using Lean Process Improvement**

### ***Community-Based Dental Education***

- **Predicting Rural Practice and Service to Indigent Patients: Survey of Dental Students Before and After Rural Community Rotations**
- **Community-Based Dental Education Models: An Analysis of Current Practices at U.S. Dental Schools**



# How about your work?

➤ **Your title?**



# Step 2 – Your abstract

**Tell your story in 250 words for JDE abstract / more if poster abstract:**

- **Significance sentence**
- **What: The purpose of this study is...**
- **Data were collected from .. How ..**
- **The results showed ...refer to main aims**
- **In conclusion, ...**



# Abstract - example

Title:

**Orthodontists' and Orthodontic Residents' Education about  
Treating Underserved Patients – Effects on Professional Attitudes and Behavior**

**Abstract – see handout**

- **(Objective:)** In the U.S., large percentages of patients have severe malocclusion but no access to orthodontic care. The purpose of this study was to explore the degree to which orthodontic residents and orthodontists perceived that their graduate orthodontic education had prepared them well to treat underserved patients, and whether this education affected their (a) professional attitudes, and (b) behavior concerning providing care for members of historically-underserved patient groups.
- **(Methods:)** Survey data were collected from 135 residents in US and Canadian graduate orthodontic programs and from 568 active members of the American Association of Orthodontists (AAO).
- **(Results:)** While the majority of residents and orthodontists felt well prepared to treat patients from different ethnic / racial backgrounds, considerably fewer respondents felt well prepared to treat patients on Medicaid (64.7% / 34.4%), pro bono cases (45.4% / 33.4%), patients with special needs (52.8% / 35%), patients with craniofacial anomalies (65.3% / 52.6%), and patients with developmental delays (45.5% / 30.5%). Perceptions of the quality of education correlated significantly with (a) the professional attitudes and (b) the actual / projected behavior concerning providing care for patients from these underserved patient groups.
- **(Conclusions:)** These findings showed a clear relationship between how future orthodontists are educated about providing care for patients from underserved populations and their professional attitudes and behavioral intentions to provide care for individuals who historically have encountered access to care barriers. Dental education has to accept the responsibility to prepare future dental care providers to be able to treat patients from underserved groups.



# How about your work?

- **Abstract?**
- **Significance?**
- **Objectives?**
- **Methods?**
- **Results?**
- **Conclusions?**



## **Step 3 – Introduction: Background & significance**

- **Why is your topic significant?**
- **What do we know about this topic so far from other research?**
- **How does your work connect to the previous work?**
- **What is new about your story? And why is it important to do this research?**
- **Exact objectives?**



# Example

## ➤ **Orthodontist study**

### ➤ **Previous research:**

- **Dao et al. General dentists and special needs patients: does dental education matter? J Dent Educ 2005**
- **Smith et al. Dental education and care for underserved patients: an analysis of students' intentions and alumni behavior. J Dent Educ 2006**
- **Rich et al. General dentists and pediatric dental patients: the role of dental education. J Dent Educ 2006**





# Example

- **What is new about it?**
  - **Previous research looked mainly at pre doctoral students and alumni and their pre doctoral education**
  - **This study looks at orthodontic residents and specialists**



# Example

- **What is important about it?**
  - **Lots of children and adults have severe malocclusions that limit their functioning and have severe social consequences**
  - **But have no access to care.**
  - **Can this study help to raise awareness and find a solution?**



# How about your work?

- **Previous research?**
- **How does your work connect?**
- **How does your work go beyond?**
- **How is your work important?**
- **Objectives?**



## Step 4 – Methods section

- **Your Methods section has to be detailed enough that anybody who wants to replicate your study can do so!**
- **Report that you have IRB approval – even if your study is exempt:**
  - This research was approved by the Institutional Review Board for the Health Sciences (IRB-Health) at the University of Michigan, Ann Arbor, MI. , on February 17, 2015 (# HUM00014104).
  - This research was determined to be exempt from Institutional Review Board (IRB) oversight by the IRB for the Health Sciences (IRB-Health) at the University of Michigan, Ann Arbor, MI. , on February 17, 2015 (# HUM00014104).



# Data analysis

- **Clean the data – don't throw away pure gold.**
- **Descriptive analyses:**
  - **Structure your data in meaningful chunks / tables**
  - **Frequency distributions / % / mean / SD / range**
  - **Code open ended responses**
- **Inferential statistics:**
  - **Group comparisons?**
  - **Correlations?**
  - **Regression analyses?**
- **STORY?????**



# Methods - Respondents

- **From whom did you collect data?**
  - **Power analysis?**
  - **Who participated? Inclusion / exclusion criteria**
  - **How many were approached and how many responded? Response rate**
  - **Who responded?**



# Example: Respondents

- Data were collected from 135 orthodontic residents and 568 active members of the American Association of Orthodontists (AAO).
- Table 1 provides an overview of the background and practice characteristics of the two respondent groups.
- The first group included 135 of the approximately 325 orthodontic residents from US and Canadian graduate orthodontic programs who attended the 2007 Graduate Orthodontic Residents Program (GORP) in Saint Louis, Missouri (Response rate: 41.54%).
- The second group consisted of 568 practicing orthodontists who responded to an anonymous survey that was mailed to 1,500 randomly selected AAO members (Response rate: 37.87%). The majority of respondents in both groups were male (residents: 61.5% / orthodontists: 79%) and from a European American background (residents: 64.4%) and orthodontists: 88.2%).



# Respondents

<i>Background:</i>	Residents N = 135	Orthodontists N = 568	p
<b>Gender:</b>			
- male	61.5%	79%	p<.001
- female	38.5%	21%	
<b>Age:</b>			
- Mean	28.67	48.30	p<.001
- SD	3.005	10.942	
- Range	23 - 43	28 - 75	
<b>Ethnicity / race:</b>			
- African American	3%	2.3%	p<.001
- Asian American	17.4%	5.4%	
- European American	64.4%	88.2%	
- Latino / Hispanic	5.3%	2.5%	
- Biracial	0%	1.2%	
- Others	9.9%	.4%	
<i>Practice characteristics:</i>			
<b>Years of practicing:</b>	N/A		N/A
- Mean		18.13	
- SD		10.803	
- Range		0 to 44	
<b>Which best describes your practice / employment situation?</b>	N/A		N/A
- Solo practice		73%	
- Partnership		19%	
- Associateship		4.2%	
- other		3.7%	





# Methods - Procedure

## ➤ Procedure:

- Pilot tests? Why? With whom? And how?
- Main study:
  - How were subjects recruited?
  - How were data collected?



# Example - Procedure

- The graduate student data were collected at the GORP meeting in Saint Louis, Missouri, in August 2007. The residents from all US and Canadian orthodontic residency programs were invited to attend this annual meeting. When the graduate students arrived and registered for the conference, they received a letter explaining the study, a consent script, the survey and a return envelope that they used to anonymously return the survey into a box at the registration desk. The students were informed that they could participate in a drawing for an iPod shuffle after they returned the survey and filled out a separate form with their name and address.
- The data from the practicing orthodontists were collected with a mailed survey which was sent to a random sample of 1,500 active members of the American Association of Orthodontists (AAO). The address labels for this mailing were purchased from the AAO. The mailing consisted of a cover letter written by the dean of the University of Michigan – School of Dentistry informing the AAO members about the study and encouraging them to respond to the survey, a consent script, a survey, and a self-addressed stamped envelope in which they could return the survey to the researchers.



# Methods - Materials

## ➤ **Materials:**

- **Describe how you measured your theoretical variables of interest**
- **Report how good they are:**
  - **Reliability**
    - **Cronbach alpha: Inter item consistency**
    - **Retest reliability**
  - **Validity**
    - **Face validity**
    - **Internal validity**
    - **External validity**
    - **Construct validity**



# Example: Materials

- **Both surveys assessed the respondents'**
  - demographic background
  - practice characteristics
  - educational experiences - perceptions of the quality of their classroom based, clinic based, and community based education about treating members of three patient groups
  - attitudes towards treating patients from underserved groups
  - professional behavior
- **Describe which type of questions: single item or scale?**
- **Which answer scales were used?**



# Methods – Statistical analyses

- **Data in which form?**
- **Program used? SPSS – how to cite website.**
- **Descriptive statistics**
- **Inferential statistics: With which tests**
- **P?**



# Example – Statistical analysis

- The data were analyzed with SPSS (IBM SPSS Statistics for Windows; Version 22.0. Released 2013. Armonk, NY: IBM Corp).
- Factor analyses were used to construct educational and attitudinal indices.
- The reliability of these scales was determined by computing a Cronbach alpha reliability coefficient for each scale.
- Descriptive statistics (percentages, means) were used to provide an overview of the distribution of the respondents' answers concerning the concepts of interest (see Tables 1 to 4).
- Correlational analyses with Pearson correlation coefficients were performed to determine whether the educational background responses and the attitudinal responses correlated as predicted (see Table 5).
- Five multivariate analyses of variance with the three educational indices as the dependent variables and the two factors "Type of provider: Orthodontists vs. residents" and "Care provided: Yes / no" were conducted for each of the five types of patient groups respectively (see Table 6).
- A p-value of  $< 0.05$  was considered statistically significant.



# Step 5: Preparing tables and figures

- **A table has to be understood on its own**
  - **Title**
  - **Column headings**
  - **Legend**
- **A figure has to be clear**
  - **Title**
  - **Describe y and x axis**



# Example: Table

**Table 2a:** Educational experiences concerning patients with different background characteristics

<i>Different ethnic backgrounds:</i>	<i>Respondents</i>	<i>1 &amp; 2<sup>1</sup></i>	<i>3</i>	<i>4 &amp; 5</i>	<i>Mean</i>
My classroom education in orthodontics prepared me well to treat patients from different ethnic / racial backgrounds.	Residents	2.4%	19.5%	78%	4.28
	Orthodontists	8.3%	11.7%	80%	4.23
My clinical education in orthodontics prepared me well to treat patients from different ethnic / racial backgrounds.	Residents	.8%	12.8%	86.4%	4.49
	Orthodontists	6.5%	11.3%	82.3%	4.32*
My community based education in orthodontics prepared me well to treat patients from different ethnic / racial backgrounds.	Residents	8.3%	24.8%	66.9%	4
	Orthodontists	15.6%	16.9%	67.5%	3.91
<i>Medicaid &amp; pro bono cases</i>					
My classroom education in orthodontics prepared me well to treat patients on Medicaid.	Residents	14.4%	30.5%	55.1%	3.62
	Orthodontists	51.5%	21.8%	26.9%	2.63***
My clinical education in orthodontics prepared me well to treat patients on Medicaid.	Residents	9.8%	25.4%	64.7%	3.83
	Orthodontists	43.6%	22.1%	34.4%	2.88***
My community based education in orthodontics prepared me well to treat patients on Medicaid.	Residents	9.4%	31.3%	59.5%	3.73
	Orthodontists	45.9%	24.7%	29.4%	2.71***
My classroom education in orthodontics prepared me well to treat pro bono cases.	Residents	18.3%	37.5%	44.1%	3.41
	Orthodontists	39.6%	28.3%	32.1%	2.85***
My clinical education in orthodontics prepared me well to treat pro bono cases.	Residents	22.3%	32.2%	45.4%	3.36
	Orthodontists	39.5%	27.2%	33.4%	2.9***
My community based education in orthodontics prepared me well to treat pro bono cases.	Residents	15%	42.1%	43%	3.41
	Orthodontists	22.4%	28.9%	38.6%	3.06**

Legend: + = p<.10; \* = p<.05; \*\* = p<.01; \*\*\* = p<.001

<sup>1</sup> The answers were given on 5 point answer scales from 1 = "disagree strongly" to 5 = "agree strongly". Responses "1" and "2" were added up and responses "4" and "5" were added up.





# Step 6 - Results

- **Start with description of sample**
- **Tell your story again:**
  - **Systematically report the findings for each aim**
  - **Refer to tables and figures and point to most important findings**
  - **Provide additional information that might not be in tables and figures**



# Step 7 – Discussion

- **Your discussion section tells the story again**
- **It consists of**
  - **An internal discussion: what did you predict / expect and what did you find?**
  - **An external discussion: what did other researchers find and what did you find?**
  - **What do your findings mean?**
  - **Limitations? Outlook**



# Step 8 - Conclusion

- **BASED ON FINDINGS!**
- **NO GENERAL THOUGHTS UNCONNECTED TO RESULTS!**
- **Tell your story again!**
- **What did you learn?**
- **Be precise and concise!**



# Example - Conclusions

Based on these findings, several conclusions can be drawn.

- First, residents and orthodontists largely agreed that their classroom and clinic based graduate dental education prepared them well to treat patients from diverse ethnic / racial groups. However, residents and practicing orthodontists indicated they were less well prepared to treat socioeconomically disadvantaged patients and patients with different special needs.
- Second, a comparison of the responses of the residents and the orthodontists showed that the residents rated their educational experiences more positively than the orthodontists.
- Third, residents reported a relatively low level of confidence concerning providing care for patients with craniofacial anomalies and developmental delays. This finding should challenge dental educators to reflect on the quality of education they provide in their programs.
- Fourth, orthodontists' actual behavior concerning the treatment for patients from these underserved groups was significantly higher than the residents' behavioral intentions. Increasing residents' willingness to contribute to reducing the access to care problems in the US has to become a priority.
- Finally, and most importantly, a relationship was found between the quality of dental education in this context and the professional attitudes and behavioral indicators of the respondents. Faculty members and administrators in orthodontic graduate programs should realize the important contributions these educational experiences can make to increasing access to care for underserved patient populations.



# Questions?



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