



PERSPECTIVES on GOALS of RESEARCH

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Introduction

- Personal **perspectives** on the **goals** of **research**
- **Aids** in achieving personal research goals
- **Previous work**
- **Current** research **interests**
- **Aims** for interdisciplinary **collaboration**

Importance of Research

Obtaining answers to important questions

**University mission: conduct valuable research ... and contribute
to Saudi Arabia's knowledge society**

Bachelor's Degree

Find and Make Opportunities

Hard Work

- Distinguished faculty generous with knowledge and time
- Excellent facilities
- First published paper- first job

Residency

Practical Experience and Perspective

- Surgery resident and general practitioner before coming back to KSU as a demonstrator in the division of OMFR.
- In-depth clinical training → provided practical experience and perspectives in diagnosis and management of disease- all disciplines
- Recommend academics- go out into the field (even volunteer)
 - Emphasize practical applications
 - Makes us aware of things we may not have expected

Residency

Goals of Research

Choice of Topics

- First independent idea for an original research study- bacteremia

Goal of Research

To answer questions to contribute to improvement of peoples' lives

- More ideas than I can pursue
- Sharing → great discussions → better ideas- different perspectives
- Limitless amount of information to be investigated
- Sharing benefits everyone and hurts no one (except in manufacturing)

Choice of Research Topics

Clinical Need- Radiology

Passionate About Topic

- Accuracy of imaging modalities- relationship between radiographic appearance and presence of disease- usefulness of radiographs in diagnosis- radiation dose reduction
- Clinical need → motivated- impact in the field- concrete health benefits
- All research takes time- very tedious and boring and even frustrating at certain stages

Developing Research Skills

Curiosity

Extensive and In-depth Reading

Courses + Discussions with Mentors

- Combined clinical practice with curiosity and extensive reading (with guidance)
- Gain the most of courses in program (research methodology- critique scientific literature- statistics).
- Extracurricular courses (e.g. Medical Education Dept.-College of Medicine, Deanship of Skills Development- Deanship of Scientific Research, private tutor)

Developing Research Skills

Expertise = Experience + Reading

- PG program → introduce basics of specialty and teach how to become a lifelong learner.
- Example of visiting professor.
- New topic or issue, not sufficient for me to just describe it in report- read and research for deeper understanding

Curiosity and Questioning the Status Quo

Are accepted practices based on scientific evidence?

- Continuous search for better understanding → another source for research ideas through questioning currently accepted standards of patient care and analyzing the rationale behind them.
- Useful discussion forums: conferences and online discussion groups
 - Internationally renowned experts in the field- share ideas for feedback
- Well-known authorities in the field practice → not necessarily correct or above question
- Read extensively on a subject and analyzed and critiqued the literature adequately → could justify questioning the accepted status quo and asking for justifications from those who practice it

Curiosity and Questioning the Status Quo

Confidence based on extensive reading and careful analysis

- Relationship between the appearance of bone and osteoarthritis → conducted study and concluded that available evidence cast serious doubt on currently held beliefs → recommended further avenues of research to further clarify the issue
- Well-researched reasoning and skepticism may be appreciated by the very people who are being questioned.
- Questioning cause for invitation to be reviewer and co-chair of a scientific session

Reviewing for Scientific Journals

Benefits

- Learning opportunity
 - Up to date research and descriptions of new techniques.
 - Behind the scenes- decision making process
- Compare with other reviewers' comments
 - Sometimes agree
 - Often discuss different aspects of study- complimentary
 - Sometimes, opposing opinions → analyze which of our opinions is more valid and why?

Reviewing for Scientific Journals

Choice of Journals

- **ISI Journals**

- Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology
- Dentomaxillofacial Radiology
- International Journal of Computer Assisted Radiology and Surgery
- The Journal of Advanced Prosthodontics

- **Saudi Journals**

- Saudi Dental Journal
- The Saudi Journal for Dental Research

- **Select peer-reviewed university journals**

Research Study Leading to More Works

- Missing info
- New techniques
- Expertise sought in authoring books and invited reviews

Networking- Participation in Conferences

- Networking, participation, and sharing ideas → **gained** research **collaborators** for a major project
 - Collaborators may be from **within** the **University**, or from **other institutions** within the country, or **international collaborators**
- Networking **familiarize with work and personality-** especially important for students and young researchers

Getting out of the Comfort Zone

Leaving comfort zone may expose a person to new experiences and provide new opportunities

- **CARS**- Computer Aided Radiology and Surgery
- Carefully planned protocol- rigorous design- careful execution of study- strict QA program → decided to **leave comfort zone** and present the science

Handling Setbacks

Pursue Other Topics

No Effort Truly Lost

- Some research efforts may not bear fruit
 - Review of the literature → topic has already been addressed
 - No funding
 - Inadequate facility, collaborators other specialties
 - Circumstances
- Other avenues- until the circumstances become right to go back to the previous topics

Past Mistakes

- Insufficient background research- Not validating data collection tool
- Failure to perform pilot studies

Publishing Papers

Prestigious Journals

Patience

- ISI journals or Saudi journals
- Patience with reviewers
 - Comments point by point
 - Sometimes requires consultation- statistics
 - If research protocol well thought out and planned, this stage becomes easier
- If rejected, don't be discouraged.
 - Address reviewer comments
 - Submit to another prestigious journal

Hard Work

Current Research Interests

1. Diagnostics and **imaging** of dental **implant sites** and **TM joints**
2. Relationship of **bone morphology** to **TM joint disease**
3. **Iterative reconstruction algorithms** in **CT imaging** for maxillofacial applications
4. Developing **iterative reconstruction algorithms** for **cone beam CT**
5. **Surgical navigation** systems for **dentistry**
6. **Sterilizable image plates** or **antibacterial coatings** for use on image plates or clinic surfaces and patient care items

Thank you

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