Academic legacy of Aubrey Sheiham and future directions in dental research

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Aubrey’s short bio - timelines

- 1936: born in Western Cape, South Africa
- 1957: BDS from Witwaterstand, South Africa
- 1957-2015: London
- 1961: London Hospital
- 1968: PhD in Periodontology
- 1975-1984: Lecturer; Senior Lecturer; Reader in Community Dental Health at the London Hospital
- 1984-2001: Professor and Honorary Consultant in Dental Public Health at UCL
- 2002-2015: Emeritus Professor, UCL
Aubrey's short bio - achievements

✓ published more than 480 papers and books on a wide range of clinical and dental public health topics

✓ supervised 52 PhD students from 20 different countries

✓ Many awards, including
  - Honorary Doctorates from the University of Athens, Greece; and the University of Western Cape, South Africa
  - Honorary Fellowship of the Faculty of Dental Practice, Royal College of Surgeons, England

✓ IADR Distinguished Research Award (2 times)
  - 2001: Behavioral Sciences and Health Services
  - 2015: Global Oral Health Research
Seminal contribution in research

Four major areas:

1. Evidence-based dentistry
2. Dental public health research and policy
3. Oral health related quality of life and Needs Assessment
4. Oral health inequalities and the social determinants of health
Scientific basis of dentistry: 6-monthly recall

✓ Challenged the belief for 6-monthly dental recall intervals for all age groups and irrespective of need
✓ Lack of scientific evidence
✓ Risk of overtreatment
✓ Risk of iatrogenesis ("tooth death spiral")

Scientific basis of dentistry: 6-monthly recall

✓ “The recommended interval between oral health reviews should be determined specifically for each patient and tailored to meet his or her needs, on the basis of an assessment of disease levels and risk of or from dental disease”

✓ Consider: a) effects of behaviours; b) other risk factors; c) outcome of previous care episodes and suitability of previously recommended intervals; d) patient's ability or desire to visit the dentist; e) financial costs.

✓ Recall interval range: 3-24 months (3-12 months for <18-y-o)

https://www.nice.org.uk/guidance/cg19/chapter/1-guidance.
Scientific basis of dentistry: effect of scale and polish?

- Questioned effectiveness of professional oral hygiene (scale and polish) procedures
- Periodontal diseases: no major role for Calculus
- Lack of good quality research evidence justifying routine scale and polish
- “We do not pay doctors to clean patients’ toenails. Why do we pay dental workers to clean people’s teeth, a procedure which has questionable health benefit and may lead to loss of periodontal attachment?”

Scientific basis of dentistry: effect of scale and polish?

✔ Subsequent Cochrane systematic review... on the effects of “Routine scale and polish for periodontal health in adults“.

✔ “There is insufficient evidence to determine the effects of routine scale and polish treatments. High quality trials conducted in general dental practice settings with sufficiently long follow-up periods (five years or more) are required to address the objectives of this review”.

Scientific basis of prevention: fluorides and caries – Cochrane Collaboration

✓ Challenged prevention practices, not only treatment
✓ Supervised series of Cochrane reviews on fluorides
✓ Strong supporter / advocate of Cochrane Collaboration
  ✓ Cochrane Collaboration Visiting Scholarship
  ✓ Aubrey Sheiham Evidence-based Health Care in Africa Leadership Award
✓ Sir Iain Chalmers: “No dentist, anywhere in the world, had done more to promote evidence-informed policy and practice in health care”

Dental public health research and policy

Conceptual / theoretical underpinnings...

- Change preventive paradigm: from the traditional clinical, individualistic approach that targeted high risk groups to a whole population focus
- Emphasis on health promotion
- Shared risks for non-communicable diseases, including oral diseases (Common Risk Factor Approach)
- Create a healthier environment to achieve sustainable improvements in population oral health

New preventive paradigm: towards population, not high-risk, strategy

✓ Seminal work on preventive strategies¹

✓ Limitations of the high-risk strategy

✓ majority of caries lesions were found not in the so-called ‘high-risk’ group, but instead across the majority ‘healthy’ population²


Common Risk/Health Factor Approach

Diet → Obesity
Diet → Cancers
Diet → Heart Disease
Diet → Respiratory disease
Diet → Dental caries
Diet → Periodontal diseases
Diet → Trauma

Stress → Obesity
Stress → Cancers
Stress → Heart Disease
Stress → Respiratory disease
Stress → Dental caries
Stress → Periodontal diseases
Stress → Trauma

Control → Obesity
Control → Cancers
Control → Heart Disease
Control → Respiratory disease
Control → Dental caries
Control → Periodontal diseases
Control → Trauma

Hygiene → Obesity
Hygiene → Cancers
Hygiene → Heart Disease
Hygiene → Respiratory disease
Hygiene → Dental caries
Hygiene → Periodontal diseases
Hygiene → Trauma

Smoking → Obesity
Smoking → Cancers
Smoking → Heart Disease
Smoking → Respiratory disease
Smoking → Dental caries
Smoking → Periodontal diseases
Smoking → Trauma

Alcohol → Obesity
Alcohol → Cancers
Alcohol → Heart Disease
Alcohol → Respiratory disease
Alcohol → Dental caries
Alcohol → Periodontal diseases
Alcohol → Trauma

Exercise → Obesity
Exercise → Cancers
Exercise → Heart Disease
Exercise → Respiratory disease
Exercise → Dental caries
Exercise → Periodontal diseases
Exercise → Trauma

Injuries → Obesity
Injuries → Cancers
Injuries → Heart Disease
Injuries → Respiratory disease
Injuries → Dental caries
Injuries → Periodontal diseases
Injuries → Trauma

Upstream - downstream interventions

‘Upstream’
Healthy Public Policy

National &/or local policy initiatives
Legislation/Regulation
Fiscal Measures
Healthy Settings- HPS
Community Development
Training other professional groups
Media Campaigns
School dental health education

‘Downstream’
Health Education & Clinical Prevention
Chair side dental health education
Clinical Prevention

Sugar and Caries

➢ There is a wealth of evidence showing that sugars are undoubtedly the most important dietary factor in the development of dental caries\(^1\)-\(^6\).

➢ There are numerous reviews of the same body of literature on diet and caries. All conclude that non-milk extrinsic sugars, particularly sucrose, is the main cause of caries.

Sugar intake: WHO guidelines

- The intake of free sugars should be reduced throughout the life course.
- Evidence indicates that in both adults and children, the intake of free sugars should be reduced to less than 10% of total energy intake.
- Reduction to less than 5% of total energy intake provides additional health benefits.

Guideline:
Sugars intake for adults and children

http://www.who.int/nutrition/publications/guidelines/sugars_intake/en/
Sugar Reduction
The evidence for action

October 2015
Oral health related quality of life

- Subjective measures – to what extent oral conditions impact on the daily life of people
- Psychosocial impacts of oral conditions
- Emphasis on outcomes rather than disease processes – sociodental indicators
- Development of key OHRQoL measures: OIDP and Child-OIDP
- Beyond their technical characteristics into practical application to assess needs and plan services

An OHRQoL index for Needs Assessment

The Child - Oral Impacts on Daily Performance (Child-OIDP)

- Eating food
- Speaking clearly
- Cleaning mouth
- Sleeping
- Smiling, laughing, showing teeth without embarrassment
- Maintain usual emotional state without being irritable
- Carrying out school work
- Enjoying contact with other people

8 items

Oral Impacts on daily life (Child-OIDP) in UK

<table>
<thead>
<tr>
<th></th>
<th>Percentages</th>
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<tbody>
<tr>
<td></td>
<td>12 year olds</td>
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<tr>
<td><strong>Any difficulty in last 3 months</strong></td>
<td>58</td>
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<tr>
<td>Difficulty eating</td>
<td>22</td>
</tr>
<tr>
<td>Difficult speaking</td>
<td>9</td>
</tr>
<tr>
<td>Difficulty cleaning teeth</td>
<td>22</td>
</tr>
<tr>
<td>Difficulty relaxing</td>
<td>10</td>
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<tr>
<td>Felt different</td>
<td>14</td>
</tr>
<tr>
<td>Felt embarrassed smiling or laughing</td>
<td>35</td>
</tr>
<tr>
<td>Difficulty doing schoolwork</td>
<td>6</td>
</tr>
<tr>
<td>Difficulty enjoying being with people</td>
<td>9</td>
</tr>
</tbody>
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Assessing treatment needs

- Seminal paper (1982)
- Critique of the inadequacy of the clinical (normative) need used on its own to assess needs
- More realistic assessment should include:
  - functional and social dimensions of dental disease
  - assessment of the social and motivational factors which predispose people towards dental ill health and influence the effectiveness of treatment and health education
- “Clinical indices are essential for measuring oral disease, but the problem arises when these indices are used as measures of health and treatment need”

The Socio-dental approach to assessment of oral health needs

Applying the Socio-dental approach: Korean national dental survey

✓ Decrease % in number with prosthetic need
1. PN1: 67.4% (p<0.001)
2. PN2: 67.6% (p<0.001)
3. PN3: 63.7% (p<0.001)
4. PN4: 25.0%

✓ Decrease in % of people
1. PN1: 67.1% (p<0.001)
2. PN2: 67.2% (p<0.001)
3. PN3: 65.3% (p<0.001)
4. PN4: 33.3%

Comparison of NN and IRN for prosthetic treatment by number of prosthetic need

Comparison of NN and IRN for prosthetic treatment need by individual

Oral health inequalities: Social gradient
(Oral) Heath Inequalities: Social gradients

US adults (NHANES III)

Adjusted for: age, sex, ethnicity, insurance (dental/medical), BMI, smoking, diabetes, diet, blood pressure, exercise.

Relative inequalities in oral health in England and the US

* Oral impacts defined in Methods section

Social inequalities in oral health: from evidence to action

Edited by Richard G Watt, Stefan Listl, Marco Peres and Anja Heilmann
Contribution to oral health inequalities research

Inaugural recipient of the IADR Distinguished Scientist Award in Global Oral Health Research:

“For nearly 50 years, Sheiham has made a significant and outstanding contribution to global oral health research and has been a pioneer in the field of oral health inequalities research... His seminal work on the nature of the social gradients in oral health across the life course has been highly influential in determining a global research agenda. Of particular note has been his work on exploring the social determinants of population oral health inequalities and challenging the narrow biomedical perspective that failed to acknowledge the broader societal, social and behavioral factors on oral health”
What next?

- Follow the same principles – adapt and address (old and) new challenges
- Wider (than just oral health), multidisciplinary approach for interventions to improve health (CRFA): evaluation
- Planning based on needs: fine-tune and apply sociodental approach
- Beyond measuring inequalities...into: a) explaining (pathways); and b) addressing them (evaluation of interventions / policies)
- Evidence-based policy (not just oral health)
International advocate

✓ IADR  
✓ WHO  
✓ FDI
  - Policy statements – evidence into action
Teacher and mentor