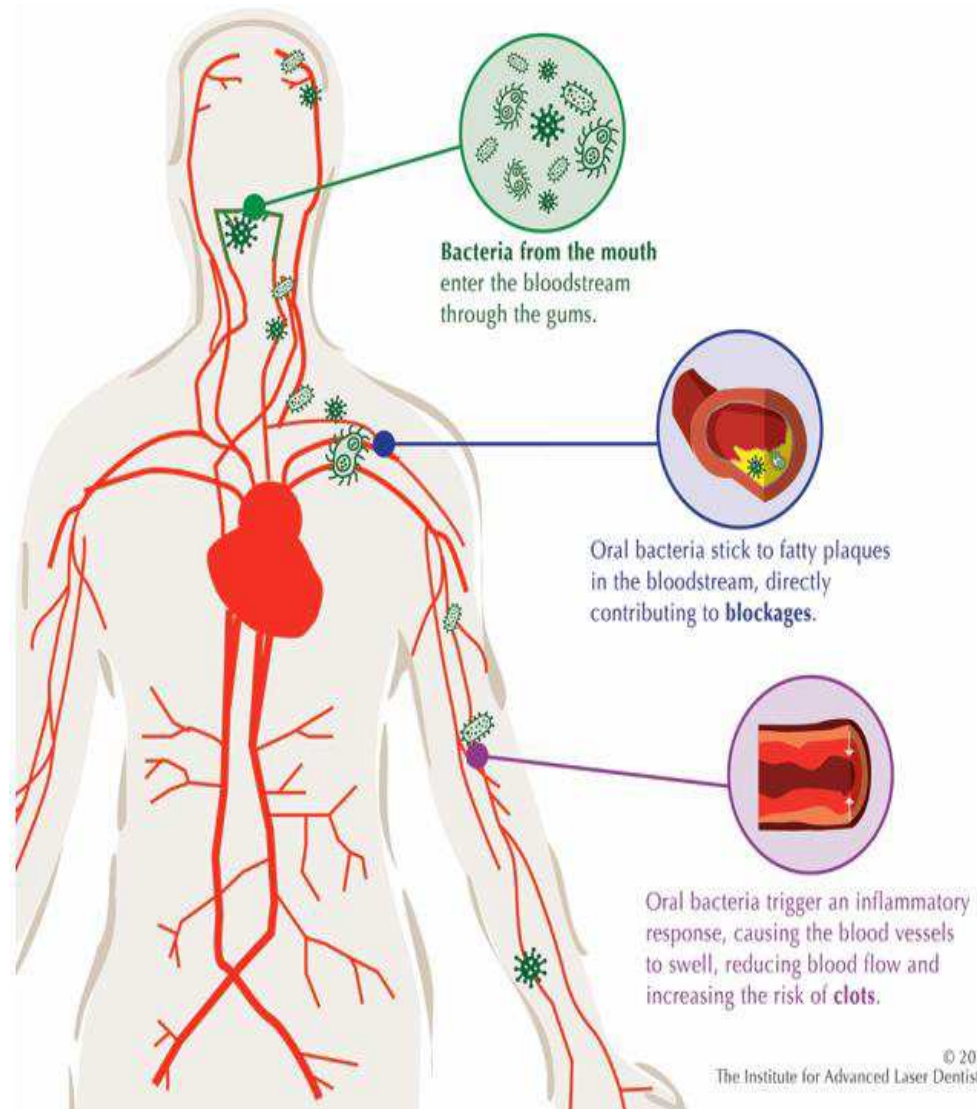


# Oral Health Care and Cardiac Care Clinicians: Current Practices and Future Direction

**Sanchez P**, George A, Everett B, Salamonson Y, Ajwani S, Bhole S, Bishop J,  
Lintern K, Nolan S, Rajaratnam R, Redfern J, Sheehan M, Skarligos F,  
Spencer L, Srinivas R

**PhD Student, COHORTE Research Group**

# Background



- Periodontal diseases have been linked to atherosclerotic cardiovascular disease ACVD<sup>1,2,3,4</sup>
- Evidence suggest periodontitis as an independent risk factor for ACVD<sup>3</sup>
- Consensus statements recommend including oral health promotion in the cardiac setting<sup>5,6,7</sup>
- However, current practices of cardiac care clinicians in Australian is not known<sup>8</sup>

## ***Aim***

To explore the perceptions, knowledge and practices of cardiac care clinicians regarding oral health care and their potential role in promoting oral health



# Method

A qualitative approach using purposive sampling was used

Four semi-structured focus groups ( $n=22$ ) and one-on-one phone interviews ( $n=8$ ) were conducted with cardiac care clinicians across Australia: Sydney, South Western Sydney and other States

The interviews were recorded, transcribed and thematically analysed



# Demographic information (n=30)

Characteristic	Frequency	(%)
<b>Age</b>		
Mean (SD) Range	42.9 (9.84) 24-59	
<b>Gender</b>		
Female	26	(86.7)
Male	4	(13.3)
<b>Location by state</b>		
NSW	25	(83.3)
Queensland	2	(6.7)
South Australia	1	(3.3)
Victoria	2	(6.7)
<b>Area of work</b>		
Rehabilitation/ambulatory	9	(40.9)
Acute in/outpatients	8	(36.4)
Chronic cardiac	5	(22.7)
<b>Years working in cardiac</b>		
<1 year	3	(10.0)
1-10 years	8	(26.7)
>10 years	19	(63.3)
<b>Position</b>		
Nursing related	27	(90.0)
Physiotherapist/Exercise physiologist	3	(10.0)

# Results: Themes

Main Themes	Sub Themes
1. Experiences and knowledge regarding oral health and CVD	<ul style="list-style-type: none"><li>• Perceived oral health status of patients</li><li>• Perceived barriers for patients to seek oral health care</li><li>• Current knowledge and training in oral health</li></ul>
2. Current oral health practices in the cardiac setting	<ul style="list-style-type: none"><li>• Oral health promotion</li><li>• Risk assessment and referrals</li></ul>
2. Perceptions about promoting oral health in the cardiovascular setting	<ul style="list-style-type: none"><li>• Acceptability</li><li>• Barriers for clinicians</li><li>• Suggested strategies to promote oral health</li></ul>

# Experiences and knowledge regarding oral health and CVD

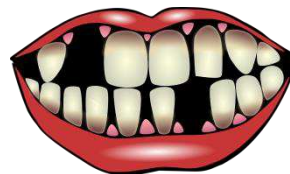
- ***Perceived oral health status of patients***

Most clinicians ( $n=27$ ) reported encountering patients with poor oral health

*I would say three out of 10...missing teeth, bad breath, people with just unclean looking teeth. [AN, nurse]*

*Six or seven out of 10... they've got gum disease, misfitting dentures that lead to poor oral intake. [CR, nurse]*

*With the Indigenous patients probably most of them would have had oral health issues... I would say probably 80 per cent. [SP, nurse]*





# Experiences and knowledge regarding oral health and CVD

- ***Perceived barriers for patients to seek oral health care***

Included cost, lack of awareness, difficulties accessing public dental service

*Definitely money is a big issue. I've got patients that stopped seeing their cardiologists because they can't afford it.* [CR, nurse]

*I don't think it's very - probably not really public, the knowledge about the link between oral health and cardiac health.* [RA, physiotherapist]

*Problems with transport, they've got co-morbidities, they've got to see a million and one specialists.* [AR, nurse]





# Experiences and knowledge regarding oral health and CVD

- ***Current knowledge and training in oral health***

The majority ( $n=24$ ) reported having limited or no knowledge about the relationship between oral health and CVD and highlighted their lack of training

*I have understood the need of patients to get their teeth checked before valve surgery but I've never put two and two together.* [KK, nurse]

*Physically looking at a tooth or a gum and assessing it for gum disease, I do not feel that I have that qualification or that knowledge base.* [HE, nurse]

*It's certainly not covered in our training.* [DF, nurse]

*Certainly not in physio training.* [PU, physiotherapist]

# Current oral health practices in the cardiac care setting

- **Oral health promotion**

Majority ( $n=23$ ) agreed that oral health is rarely discussed except when patients raise the issue

*We don't talk about oral health with the patients. I don't think the doctors do either, to be totally honest. I've never heard a doctor mention anything to a patient about oral health.* [AN, nurse]

*I don't assess for oral health unless I see or they say something that makes me concerned.* [AN, nurse]

Lack of available resources was also identified as a contributing factor

*I haven't seen any oral health promotion resources in the cardiac setting.* [GC, nurse]

# Current oral health practices in the cardiac care setting

- **Risk assessment and referrals**

Referring is done on ad hoc basis

*I've seen it [referral] done a couple of times, but it's very rare.* [KA, physiotherapist]

*Not really, it's just a standardised, if they have a valve, they'll have a dental referral. But we don't, as nurses we don't initiate it. It's on our list of things that have to be done, the medical staff chase it up.* [BE, nurse]

*Sometimes if nurses identify a patient they would initiate a referral, yeah. But often we found it difficult to get them in, unless it was urgent.* [VC, nurse]



# Perceptions about promoting oral health in the cardiovascular setting

- **Acceptability**

Majority ( $n=28$ ), especially nurses, were open to the idea of promoting oral health

*I think the nurse is in the best position to promote oral health... as part of holistic care for the cardiac patient.* [KN, nurse]

*I'd say if it's identified as a problem and linked to cardiovascular disease I wouldn't see why we wouldn't do education or we even inform the patient about the risks associated.* [DF, nurse]

*I feel it's more than appropriate if I had the education and the training tools... there's definitely a place for this assessment to take place.* [CR, nurse]

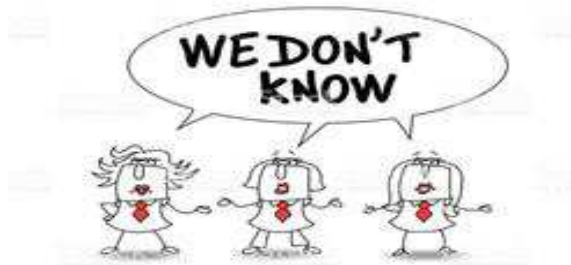
# Perceptions about promoting oral health in the cardiovascular setting

- **Barriers for clinicians**

Lack of knowledge, training, time constraints, availability of resources, lack of proper dental referral pathways

*I wouldn't feel comfortable doing an oral health assessment and a referral. But with basic education I'm comfortable with that.* [LW, nurse]

*I would have to be short and sweet, because I'm very limited in time, doing [home visits], looking at an hour maximum. I do have to fit in a lot of other cardiac information.* [BM, nurse]



# Perceptions about promoting oral health in the cardiovascular setting

- *Suggested strategies to promote oral health*

Most (n=26) felt the discharge/cardiac rehabilitation was the best time

*If they have someone directly talk to them or if they had to sit down in cardiac rehab education and hear something about oral health they're probably going to think oh, actually this is probably much more important than I had previously thought . [ZR, nurse]*

Training and resources: online and hard copy package(s), leaflets, DVDs, audio visual

*Online learning package would be the best way. [AC, exercise physician]*

*I would be happy to have a pack on oral health education to incorporate it within my cardiac education session. [SU, nurse]*



# Perceptions about promoting oral health in the cardiovascular setting

The potential for other clinicians to promote oral health was discussed

*It should be the... GPs [general practitioners] prompting them. Because at the moment oral health is not important.* [ET, nurse]

*I think it's important to include dieticians, exercise physiologists, physiotherapists, educators... it would be good if we're all on the same page.* [XF, nurse]

*Definitely the speech pathologists because they actually do the oral assessments for swallowing, especially when people come in after a stroke.* [MR, nurse]





# ***Conclusions***



Findings suggest that there is lack of emphasis regarding oral health among cardiac care clinicians

There is limited knowledge and training among cardiac care clinicians regarding the importance of oral health

Cardiac care clinicians acknowledged their potential role in promoting oral health

There is a need for a preventative program to provide oral health knowledge training, appropriate resources and structured referral pathways for the cardiac setting

# What is next?



## Oral Healthcare and Cardiovascular Disease A Scoping Review of Current Strategies and Implications for Nurses

Paula Sanchez, BN(Hons), GradDipNurs(AcuteCare), GradCert(IntCareNurs);  
Bronwyn Everett, BAppSc(Nursing), MSc(Hons), PhD;  
Yenna Salamonson, BSc, GradDipNurs(Educ), MA(Ed&Wrk), PhD;  
Shilpi Ajwani, BDS, PhD; Ajesh George, BDS, MPH, PhD

**Background:** There is epidemiological evidence showing an association between periodontal disease and cardiovascular disease (CVD). Despite this evidence\* no comprehensive review has been undertaken to identify strategies to improve the oral health of people with CVD. **Objectives:** The aim of this review is to identify current evidence relating to the oral healthcare and management of patients with CVD. **Methods:** A scoping review was undertaken focusing on 4 key areas, namely, the impact of periodontal treatment on CVD, current recommendations regarding oral health and CVD, the role of nurses in promoting oral health, and available resources to support them. Databases were searched using a combination of keywords and search terms and 34 articles were selected. **Results:** Systematic reviews suggest that periodontal treatment may improve CVD outcomes by reducing systemic inflammation and improving endothelial function. However, there is insufficient evidence to confirm or refute these findings. International guidelines recognize the link between periodontal disease and CVD and recommend preventative strategies in this area. Non-oral health professionals, including nurses, can promote oral health and have been undertaking this role in areas like aged care and pregnancy. However, this aspect of nursing care has not been explored in the cardiac setting and no relevant training and assessment tools are available. **Conclusions:** Maintaining oral health among cardiovascular patients is important, yet it appears to be neglected during cardiac care. Cardiac nurses are in an excellent position to promote oral health but further research is required to define their role and develop supporting resources.

**KEY WORDS:** cardiac rehabilitation, cardiovascular disease, nurses, oral assessment tool, oral health promotion, periodontal disease

Cardiovascular disease (CVD) is one of the leading causes of death globally, with most of these deaths due to coronary heart disease and stroke.<sup>1</sup> Coronary heart disease is a subclass of CVD along with cerebrovascular disease, peripheral vascular disease, and heart failure.<sup>2</sup>

**Paula Sanchez, BN(Hons), GradDipNurs(AcuteCare), GradCert(IntCareNurs)**  
PhD candidate, Casual Academic, School of Nursing and Midwifery, Western Sydney University, Collaboration for Oral Health Outcomes, Research Translation and Evaluation (COHORTE) Research Group, Ingham Institute for Applied Medical Research, Liverpool BC, NSW, Australia.

**Bronwyn Everett, BAppSc(Nursing), MSc(Hons), PhD**  
Associate Professor, Centre for Applied Nursing Research, Ingham Institute for Applied Medical Research, Western Sydney University, South Western Sydney Local Health District, Liverpool, Australia.

**Yenna Salamonson, BSc, GradDipNurs(Educ), MA(Ed&Wrk), PhD**  
Associate Professor, Western Sydney University, Centre for Applied Nursing Research, Ingham Institute for Applied Medical Research, South Western Sydney Local Health District, Campbelltown, Australia.

**Shilpi Ajwani, BDS, PhD**

<sup>1</sup> Health Promotion and Research, Sydney Local Health District, Sydney, Sydney Dental Hospital, University of Sydney, Australia.

In recent years, CVD has declined in developed countries, although it continues to cause significant burden. For instance, in the United States between the years 2003 and 2013, the number of CVD deaths per year declined by 11.7%, yet in 2013 alone, 1 in every 3 deaths was attributable to CVD.<sup>3</sup> In the United Kingdom, in 2014, CVD was the second most common cause of death (27%) after cancer,<sup>4</sup> and in Canada, in 2012,

**Ajesh George, BDS, MPH, PhD**

Associate Professor, Collaboration for Oral Health Outcomes, Research Translation and Evaluation (COHORTE) Research Group, Western Sydney University, South Western Sydney Local Health District, Ingham Institute for Applied Medical Research, University of Sydney, Liverpool, Australia.

The authors have no funding or conflicts of interest to disclose.

### Correspondence

Paula Sanchez, BN(Hons), GradDipNurs(AcuteCare), GradCert(IntCareNurs), (COHORTE) Research Group, Ingham Institute for Applied Medical Research, Western Sydney University, Locked Bag 7103, Liverpool BC, NSW 1871, Australia (p.sanchez@westernsydney.edu.au).

DOI: 10.1097/JCN.0000000000000388

Journal of Cardiovascular Medicine  
Vol. 00, No. 0, pp 00–00 | Copyright © 2017 Wolters Kluwer Health, Inc. All rights reserved.



### OPEN ACCESS

**Citation:** Sanchez P, Everett B, Salamonson Y, Ajwani S, Bhole S, Bishop J, et al. (2017) Oral health and cardiovascular care: Perceptions of people with cardiovascular disease. *PLoS ONE* 12(7): e0181189. <https://doi.org/10.1371/journal.pone.0181189>

**Editor:** Katrina Aalto-Setälä, University of Tampere, FINLAND

**Received:** February 8, 2017

**Accepted:** June 26, 2017

**Published:** July 20, 2017

**Copyright:** © 2017 Sanchez et al. This is an open access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Data Availability Statement:** All relevant data are within the paper and its Supporting Information files.

**Funding:** This study was supported by an Australian Postgraduate Award PhD scholarship through Western Sydney University. JR is funded by a NIMMRC Career Development Fellowship (7903) co-funded with a National Heart Future Fellowship (G160523).

**Competing Interests:** The authors have declared that no competing interests exist.

### RESEARCH ARTICLE

## Oral health and cardiovascular care: Perceptions of people with cardiovascular disease

Paula Sanchez<sup>1,2,3,4,5,6</sup>, Bronwyn Everett<sup>1,2,4,5,6</sup>, Yenna Salamonson<sup>1,2,4,5,6</sup>, Shilpi Ajwani<sup>6,7,8,9</sup>, Sameer Bhole<sup>6,7,8,9</sup>, Joshua Bishop<sup>6,9</sup>, Karen Lintem<sup>2,1</sup>, Samantha Nolan<sup>6,9</sup>, Rohan Rajaratnam<sup>2,8,10,11</sup>, Julie Redfern<sup>11,12</sup>, Maria Sheehan<sup>2,1</sup>, Fiona Skarligos<sup>6,9</sup>, Lissa Spencer<sup>6,9</sup>, Ravi Srinivas<sup>1,2,3,4,5,6</sup>, Ajesh George<sup>1,2,3,4,5,6</sup>

**1** School of Nursing and Midwifery, Western Sydney University, Sydney, Australia, **2** South Western Sydney Local Health District, Sydney, Australia, **3** Collaboration for Oral Health Outcomes, Research Translation and Evaluation (COHORTE) Research Group, Liverpool, Australia, **4** Ingham Institute for Applied Medical Research, Liverpool, Australia, **5** Centre for Applied Nursing Research, Liverpool, Australia, **6** Sydney Local Health District, Sydney, Australia, **7** Oral Health Services, Sydney Dental Hospital, Sydney, Australia, **8** Faculty of Dentistry, The University of Sydney, Sydney, Australia, **9** School of Medicine, Western Sydney University, Sydney, Australia, **10** University of New South Wales, Sydney, Australia, **11** The George Institute for Global Health, Sydney, Australia, **12** Sydney Medical School, The University of Sydney, Sydney, Australia

† These authors contributed equally to this work.

‡ These authors also contributed equally to this work.

\* paula.sanchez@swshealth.nsw.gov.au

## Abstract

### Main objective

The aim of this study was to explore the perception of patients with cardiovascular disease towards oral health and the potential for cardiac care clinicians to promote oral health.

### Method

A needs assessment was undertaken with twelve patients with cardiovascular disease attending cardiac rehabilitation between 2015 and 2016, in three metropolitan hospitals in Sydney, Australia. These patients participated in face-to-face semi-structured interviews. Data was analysed using thematic analysis.

### Results

Results suggested that while oral health was considered relevant there was high prevalence of poor oral health among participants, especially those from socioeconomic disadvantaged background. Awareness regarding the importance of oral health care its impact on cardiovascular outcomes was poor among participants. Oral health issues were rarely discussed in the cardiac setting. Main barriers deterring participants from seeking oral health care included lack of awareness, high cost of dental care and difficulties in accessing the public dental service. Findings also revealed that participants were interested in receiving further information about oral health and suggested various mediums for information delivery. The concept of cardiac care clinicians, especially nurses providing education, assessment and

# References

1. Papapanou, P. N. (2015). Systemic effects of periodontitis: lessons learned from research on atherosclerotic vascular disease and adverse pregnancy outcomes. *International Dental Journal*, 65(6), 283-291
2. Lang, W.-D., Zeng, X.-T., Kwong, J., & Hua, X.-P. (2015). Periodontal disease and risk of coronary heart disease: An updated meta-analysis of prospective cohort studies. *International Journal of Cardiology*, 201, 469.
3. Beukers NG, van der Heijden GJ, van Wijk AJ, Loos BG. Periodontitis is an independent risk indicator for atherosclerotic cardiovascular diseases among 60 174 participants in a large dental school in the Netherlands. *J Epidemiol Community Health*. 2017;71(1):37-42.
4. Bahekar, A. A., Singh, S., Saha, S., Molnar, J., & Arora, R. (2007). The prevalence and incidence of coronary heart disease is significantly increased in periodontitis: a meta-analysis. *American Heart Journal*, 154(5), 830-837.
5. Tonetti, M. S., & Dyke, T. E. (2013). Periodontitis and atherosclerotic cardiovascular disease: consensus report of the Joint EFP/AAP Workshop on Periodontitis and Systemic Diseases. *Journal of Clinical Periodontology*, 40(s14), S24-S29.
6. Baehni, P., & Tonetti, M. (2010). Conclusions and consensus statements on periodontal health, policy and education in Europe: a call for action—consensus view 1. *European Journal of Dental Education*, 14(s1), 2-3.
7. Bouchard, P., Boutouyrie, P., D'AIUTO, F., Deanfield, J., Deliargyris, E., Fernandez-Avilés, F., . . . Sanz, M. (2010). European workshop in periodontal health and cardiovascular disease consensus document. *European Heart Journal Supplements*, 12(B).
8. Sanchez, P., Everett, B., Salamonson, Y., Ajwani, S., & George, A. (2017). Oral health care and cardiovascular disease: A scoping review of current strategies and implications for nurses [Online January 31, 2017]. *Journal of Cardiovascular Nursing*. doi: 10.1097/JCN.0000000000000388.
9. Sanchez P, Everett1 B, Salamonson Y, Ajwani S, Bhole S, Bishop J, Lintern K, Nolan S, Rajaratnam R, Redfern J, Sheehan M, Skarligos F, Spencer L, Srinivas R, George A. (2017). Oral health and cardiovascular care: Perceptions of people with cardiovascular disease. *PLoS ONE*. 12(7): e0181189.

# Questions?

