ORIGINAL REPORT: QUALITATIVE RESEARCH

Oral Health in Young Australian Aboriginal Children: Qualitative Research on Parents' Perspectives

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Abstract: *Despite dedicated government funding, Aboriginal Australians, including children, experience more dental disease than other Australians, despite it being seen as mostly preventable. The ongoing legacy of colonization and discrimination against Aboriginal Australians persists, even in health services. Current neoliberal discourse often holds individuals responsible for the state of their health, rather than the structural factors beyond individual control. While presenting a balanced view of Aboriginal health is important and attests to Indigenous peoples' resilience when faced with persistent adversity, calling to account those structural factors affecting the ability of Aboriginal people to make favorable oral health choices is also important. A decolonizing approach informed by Indigenous methodologies and whiteness studies guides this article to explore the perceptions and experiences of Aboriginal parents (N = 52) of young children, mainly mothers, in Perth, Western Australia, as they relate to the oral health. Two researchers, 1 Aboriginal and 1 non-Aboriginal, conducted 9 focus group discussions with 51 Aboriginal participants, as well as 1 interview with the remaining individual, and independently analyzed responses to identify themes underpinning barriers and enablers to oral health. These were compared, discussed, and revised under key themes and interpreted for meanings attributed to participants' perspectives. Findings indicated that oral health is important yet often compromised by structural factors, including policy and organizational practices that adversely preclude participants from making optimal oral health choices: limited education about prevention, prohibitive cost of services, intensive marketing of sugary products, and discrimination from health providers resulting in reluctance to attend services. Current government intentions center on Aboriginal–non-Aboriginal partnerships, access to flexible services, and health care that is free of racism and proactively seeks and welcomes Aboriginal people. The challenge is whether these good intentions are matched by policies and practices that translate into sustained improvements to oral health for Aboriginal Australians.*

Knowledge Transfer Statement: *Slow progress in reducing persistent oral health disparities between Aboriginal and non-Aboriginal Australians calls for a new approach to this seemingly intractable problem. Findings from our qualitative research identified that structural factors—such as cost of services, little or no education on preventing oral disease, and discrimination by health providers—compromised Aboriginal people's optimum oral health choices and access to services. The results from this study can be used to recommend*

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changes to policies and practices that promote rather than undermine Aboriginal health and well-being and involve Aboriginal people in decisions about their health care.

Keywords: health services Indigenous, dental health services, social determinants of health, child health, health education dental, racism

Introduction

Improving Aboriginal and Torres Strait Islander (hereafter Aboriginal) health is a national mandate (Australian Government 2011), yet progress has been slow to reduce health disparities between Aboriginal and other Australians (Australian Institute of Health and Welfare [AIHW] 2013). An Australian public service report (Australian Public Service Commission 2007) described Aboriginal health as a "wicked" or intractable problem—one that is hard to solve, complex, symptomatic of deeper problems, persistent, and unique with no quick fix solutions. Rittel and Webber (1973) argued that resolution of this type of problem requires defining and understanding the complexity of the social context, adopting a holistic approach, seeing the bigger picture, collaborating across sectors with a view to attaining a shared understanding, showing courtesy and respect, and being open to innovative and flexible ways to address the issue.

The poor oral health of Aboriginal versus other Australians is well documented, with evidence of more dental disease periodontal or gum disease, often untreated (Roberts-Thomson et al. 2008; AIHW 2013). Aboriginal children have poorer oral health than do non-Aboriginal children, including higher rates of oral soft tissues' disorders and hospitalization for dental admissions (AIHW 2013; Slack-Smith et al. 2013). Risk factors for oral disease include diets high in sugar (Jamieson et al. 2010), dental fear, poor dental attendance, low self-efficacy associated with poor oral health (AIHW 2013), alcohol consumption, and smoking, including during pregnancy (AIHW 2006, 2013; Roberts-Thomson et al. 2014).

Yet constant reminders of dire health statistics have led some Aboriginal people to expect poor outcomes, feel disempowered, and be less motivated to engage with programs promoting health (Taylor et al. 2010). This implies that a diet of negative statistics, however serious, can be counterproductive. Taylor et al. (2010) suggest that media stories and public health campaigns need to balance adverse statistics with stories of success and empowerment that inspire rather than demotivate Aboriginal Australians to make changes. Evidence from a body of literature focusing on resilience challenges negative stereotypes and presents a more balanced perspective of Aboriginal health attesting to Indigenous peoples' strength in the face of enormous and persistent adversity (Chandler and Lalonde 2008; Cox et al. 2014).

However, structural issues that adversely affect Aboriginal people's oral health choices also need to be called to account. Macrofactors at the political economic level, such as policy and funding decisions, influence factors at the meso- or operational level, such as cost of services (Caldwell and Mays 2012). These, in turn, can preclude Aboriginal people from making favorable oral health choices. Yet, current discourse often blames Aboriginal people for their poor oral health, rather than the structural factors beyond their control that negatively affect their lived experience and ability to make optimum oral health choices (Playle and Keeley 1998; Durey et al. 2016). While such factors affect other socioeconomically disadvantaged populations (Australian Government Department of Health 2015; Wallace et al. 2015), Indigenous populations face the added burden of a legacy of marginalization and discrimination following colonization (Tuhiwai Smith 1999; Browne and Varcoe 2006; Paradies 2006). In colonized countries such as Australia, racism in health services persists; it often goes unreported and unchallenged, despite its damaging health outcomes for Aboriginal people; and it can lead to their reluctance to attend services (Larson et al. 2007; Johnstone and Kanitsaki 2009; Shahid et al. 2009; Walter and Butler 2013).

Repeated Australian governments have committed to closing the gap in health disparities between Aboriginal and non-Aboriginal Australians by building partnerships among governments, service providers, and local Aboriginal communities (Council of Australian Governments 2008). While improvements in health and education outcomes are occurring (Holland 2016), progress is slow, and ensuring that improvements are sustained is critical.

To better understand the current state of play from an Aboriginal viewpoint, this article presents findings from a qualitative research project in Perth, Western Australia, that investigated the perspectives and experiences of Aboriginal carers, predominantly mothers, in terms of factors affecting their oral health and that of their children.

Local Context

Aboriginal Australians constitute 3% of the overall Australian population (3.8% of the population in Western Australia) and have a median age of 21.8 y, compared to 37.6 y for non-Indigenous Australians (Australian Bureau of Statistics 2011). In 2011, 34.8% of Aboriginal Australians lived in the major Australian cities and 43.8% in regional centers, with 21.4% living in remote Australia (Australian Bureau of Statistics 2011). Dental care in Western Australia includes private services with various items of treatment covered by insurance, public dental services that often also incur a treatment cost, free dental services provided by Aboriginal Community Controlled Health Services, hospital emergency dental services that can incur a cost, free school dental services for children aged 5 to 16 y, and volunteer services specifically targeting Aboriginal communities in remote areas.

Methodological Approach

Given its intercultural focus, our methodology was guided by the fusion of methodological paradigms proposed by Evans et al. (2009)—namely, Indigenous methodologies and whiteness studies. We adopted a decolonizing perspective involving Indigenous methodologies that prioritized Aboriginal people by applying their own focus, perceptions, and understandings to the research process (Moreton-Robinson and Walter 2009). Aboriginal stakeholders, including one of the authors, were central to the design, implementation, analysis, and dissemination of the findings of this project. We employed an Aboriginal assistant researcher to participate in data collection, analysis, and dissemination where highlighting the voices of Aboriginal parents/carers participants was integral to the project.

A decolonizing perspective also critiques the concept of whiteness, reflected here in the dominant Western biomedical paradigm in which oral health in Australia is situated. Frankenberg (1993) and Moreton-Robinson (2009) informed our understanding of how the notion of racial "whiteness" is conceptualized as a structuring or organizing principle representing power in colonized countries. White people, as in Anglo-Australians, are advantaged in social relations where whiteness is the norm—the benchmark against which differences from that norm, such as Aboriginality, are judged, measured, and often ignored (Moreton-Robinson 2009). While whiteness can refer to skin color, it also represents a racialized social structure that sanctions "Western" approaches to knowledge: health professionals are trained in a biomedical model of health where beliefs and values attached to that model are privileged over other knowledge, including Indigenous knowledge, and are reflected in policy and practice (Kowal 2008). While this advantage operates through a set of cultural practices that are often taken for granted—unnoticed and unexamined by those who benefit from them—they also shape the lives and social relations of those who are disadvantaged (Frankenberg 1993; Moreton-Robinson 2009).

This is evident in the increasing focus in developed countries on individual responsibility for making health and lifestyle choices (Beck and Beck-Gernsheim 2002), reinforced by public health messages on what the individual needs to do improve health outcomes. This approach often ignores the socioeconomic and historic context of Aboriginal people's lives and collective experiences of discrimination, including that in health care, which can negatively affect their making optimum oral health choices (Durey and Thompson 2012). Our project aimed to privilege the voices of Aboriginal participants by hearing their perspectives on the issue, to better understand the barriers they face and the enablers to oral health and how they intersect with current oral health approaches.

Methods

The research team consisted of the authors—1 Aboriginal and 3 non-Aboriginal researchers—and 1 Aboriginal assistant researcher. Following a suggestion from the local Aboriginal community to investigate Aboriginal perspectives of oral health, extensive consultation with key Aboriginal stakeholders occurred from 2013 to 2014 in Perth, Western Australia. This led to a larger research project seeking to understand the perspectives and experiences of barriers and enablers to oral health identified by Aboriginal health workers, teenagers, parents/carers, and non-Aboriginal dental professionals working with Aboriginal children. Some results of this project have been reported elsewhere (Durey et al. 2016). This study focused on parents, mainly mothers and 2 fathers, and carers who were family members.

Recruitment relied on the professional networks of the researchers and research assistant, who contacted leading Aboriginal community and service organizations, which resulted in a snowball approach to identifying potential participants. The research team used purposive sampling to follow up Aboriginal and non-Aboriginal contacts at playgroups, Aboriginal health services, and family day care centers with a high proportion of Aboriginal children. Criteria for inclusion in the project were that participants were Aboriginal and were parents or carers of young children. The project was explained to each contact, such as the coordinator of the center, who then discussed it with parents/carers to see if they wanted to be involved in the research. Participants at each site self-selected to be involved. A time was arranged for the researchers to attend the center, explain the project to participants, and request their written consent prior to a group discussion. Depending on the time allocated, the researchers brought morning tea for participants and children or contributed to lunch. At the end of the discussion, participants were offered a $30 supermarket voucher as a token of appreciation for their time. Participants ($N = 52$) were overwhelmingly young mothers, with 2 fathers and some grandmothers. Coordinators of the various centers, who were often mothers or grandmothers themselves, also participated in the discussions.

Nine group discussions involving 51 participants, as well as 1 interview with the remaining individual ($N = 52$), were conducted across 10 sites between April and December 2014. These were held at playgroup centers, family day care centers, community centers, and 3 health services in the Perth metropolitan region. Where possible, 2 researchers—1 Aboriginal and 1 non-Aboriginal—were involved in data collection. Eight group discussions and the interview were audio recorded; written notes were taken during the other discussion. All were transcribed and imported into NVivo (http://www.qsrinternational.com/product), a computer program that helps organize and manage data during analysis. Participants were asked to complete a short demographic

Table.
Participant Locations.

Location: Code	Participants, *n*
Playgroup center	
L1	5
L2	3
Family day care center: L3	5
Community center: L4	8
Health services	
L5	7
L6	6
L7	8
Community center	
L8	3
L9	6
L10	1
Total	52

questionnaire covering age, sex, identification as Aboriginal, highest education qualification, ages of children, and postcode. Interview and group discussion questions were guided by topics related to what oral health meant to participants; what motivated them to care for their teeth and their children's and to go to the dentist; the barriers and enablers that they face; the effect of diet, including sugary drinks, on oral health; and how oral health, including dental services, could be improved for Aboriginal parents with young children. Information about participants and locations was de-identified and numerically coded to indicate quotes from the site of data collection (see Table).

Responses in each group discussion and interview were analyzed independently by 2 researchers, 1 Aboriginal and 1 non-Aboriginal to identify themes related to barriers and enablers to oral health. These were then compared for similarities and differences, discussed and revised under key themes, revisited, and interpreted for meanings attributed to participants' perspectives. This iterative approach to data analysis identified key themes and anomalies from responses, which were summarized and interrogated with existing evidence in the literature. The findings were also interpreted by critically examining them within a broader structural context in light of Indigenous methodology and the concept of whiteness. This decolonizing approach privileged the Aboriginal voice and identified how the Western biomedical approach to oral health intersected with Aboriginal perspectives and lived experience.

Ethics approval for this research was granted by the Human Research Ethics Committee at the University of Western Australia (RA/4/1/5792) and the Western Australian Aboriginal Health Ethics Committee (No. 466).

Findings

Findings showed that oral health was important, with some participants motivated to proactively maintain their oral health and that of their children despite structural barriers. Many participants accessed mainstream as well as Aboriginal-specific oral health services. A key theme emerging was the role of broader structural factors at meso- and macrolevels in informing oral health choices. These included cost, competing demands on limited budgets, the organization of services, and discrimination from health providers. These factors led many participants to avoid dentists for themselves or their children and self-manage their pain unless it was severe, in which case emergency hospital services were usually accessed. Participants were generally satisfied with the free dental service provided at schools, recommending that a similar public service be available for the 0- to 4-y age group. Participants also wanted more education on preventing oral disease from pregnancy onward, delivered in ways that were culturally appropriate and responsive to health literacy levels.

Maintaining Oral Health

Participants from most groups were aware that oral health was an indicator of general health and well-being, including brushing teeth, keeping gums healthy, having fresh breath and a healthy diet, and avoiding sugary food and drinks: "He's still breast feeding. He doesn't have cow's milk—I offer it to him but he won't drink it. But he does love water so I give him heaps and heaps of water but won't give him cordial or soft drink" (L2).

Participants proactively maintained oral health for themselves and their children, including modeling good oral health practice:

> My kids started it when they were little, I think they had 2 teeth, honestly, they had 2 teeth, my little boy would come in and look at me and I would be brushing my teeth and I'd say, "Come here," and I would give him a little brush with . . . Bart Simpson on it. . . . They've got really good teeth, both my kids. (L6)

Creative ways to facilitate good oral health practice were to make

toothbrushing fun for children, and some mothers mentioned "Spiderman" and "Barbie" toothbrushes as a motivating factor for brushing teeth: "I've got this little brush that lights up when you press the thing. . . . When he sees me brushing . . . he looks at me—his attention span is so small and he'll stand there for a couple of seconds and then pass it back to me" (L2) and "One, because they watch you doing it. From this little age, they are watching. And two, they want to know what to do with the toothbrush" (L3).

Others noted past experience of dental disease as a motivating factor in maintaining oral health:

> When I was young, I had rotten teeth because Nan reared me up and she used to give me the bottle with cordial. . . . And that made me—growing up and having rotten teeth—and chip my teeth and having caps on. And now me having a baby, I just want him to have good teeth. I don't give him cordial, and if I give him orange juice, it is watered down. Mainly I give him water. I want him to have good teeth. I don't want his teeth to get like mine and do the same as what happened with me. (L2)

Another participant maintained her oral health until diagnosed with a thyroid problem, after which her oral hygiene deteriorated: "I was very good with my teeth. I did my teeth right up until before I had that, you know, thyroid problem. And then when I had it, you know, like, you are that sick that the teeth were the last thing you worry about" (L5).

It was clear from these responses that oral health was important to participants and their children and was actively maintained unless other priorities took precedence, such as illness. However, while some mentioned the importance of dental checkups, several avoided dental visits.

Avoiding Dental Visits

Reasons given for avoidance included how services were organized around cost of treatment and long waiting times that often led to self-management of dental pain, as well as fear of dental treatment and dental extraction. Dentists were generally not visited for prevention: "The only time our family goes is if we are crying in pain" (L6).

Managing Pain

Discussions from most groups noted that dental pain was generally self-managed with analgesia, alcohol, or alternative methods, such as oil of cloves. If it became unbearable, participants might go to the hospital emergency department to have the tooth extracted, which often incurred a cost. Fear of dental extraction was also a reason to avoid the dentist for participants who wanted to retain their teeth.

While Western Australia has a public and private system of dental services, few participants across groups were insured privately. Those who accessed public services for treatment were often placed on long waiting lists. Those attending the dentist at the Aboriginal Community Controlled Health Service were seen that day on a "first come, first served" basis if they arrived by 8 AM. They often had to wait even if they were 1 of the 5 or 6 people assessed as suitable for treatment that day. Public dental services generally incurred a copayment for each item of service that was treatment focused:

> It costs you money as well. Like, if I'm not in pain, then I'm not going to go and fork out, you know, what is it, $80 or whatever to go and have it just checked when I don't even feel the pain, so there is nothing wrong. And when you have got, like lots of kids, it's not going to happen. (L7)

Discrimination

Discrimination was cited as a reason to avoid dental services in most discussion groups, though not in the interview. Participants felt discriminated against because of their Aboriginality, socioeconomic status, the state of their oral health, and bringing children to services that were not child friendly. Several participants discussed the difficulty of attending dental services when they were caring for children:

> I was a single mum, no support, no family over here. So when I did get into that dentist early in the morning, they said, "What did you bring your kids here for? . . . And they said "We can't treat you, you have got to find a place for your children." And I'm l ke "Well, what am I meant to do with them?" and they're like "Well, ring up someone to come and get them" and I'm like "I don't have anyone" and they said "Oh, everyone has someone." And they freaked out. (L3)

This experience was exacerbated for parents who wanted public dental treatment but were unable to be at the service by the required 8 AM because "you have to take your kids with you, you can't leave your kids at school before 8:00, you know what I mean, there are all these things that restrict you getting your teeth done" (L1).

This participant went on to say:

> I think that discriminates against people with children and people that have got to get their kids to school. We are told we have to have our kids at school every day but what if you have a toothache you have to get to the dentist? (L1)

Other participants felt discriminated against for different reasons, including staff at dental services making negative assumptions about their Aboriginality. One participant wanted to be:

> . . . treated like everyone else that walks in the door. Some people when they see an Aboriginal person coming, we are all put in that category, we are all put in that box if they have had a bad experience with another Aboriginal person. They wouldn't do that to an Italian woman if they had a bad experience with another Italian woman. But they will do it with an Aboriginal person. Do you see what I mean? (L6)

A participant in another group discussion elaborated on negative stereotypes that some people hold about Aboriginal people:

> It's really ignorance. It's pure ignorance and rudeness on their part. They [staff] come with all these assumptions . . . .

> Anything negative that happens, what she was describing, that is used to reinforce the bias they already have. "These blackfellas come in and they are just so nasty—oh here comes another one, watch them watch them, they are going to make trouble." (L3)

These experiences were exacerbated by not having enough money to pay for a service:

> She doesn't want to go there. The people at the desk, the receptionists—their sour faces. She is frightened she is going to lose her temper because she is in so much pain and she's going to get there and they are going to say with their sour face, "You haven't paid your bill." That bill is 2 years old. And she is going to lose her temper because she is . . . and start swearing and then they are going to kick her out. So she is scared of the confrontation and the drama and the rejection and what will happen when she turns up. And the fact that in front of all these people she is going to be humiliated because she has got no money, and hasn't been paying the bill. (L3)

These experiences resulted in many Aboriginal people feeling shame and humiliation, leading to their reluctance to return to the service.

Shame

In several discussions, participants talked about the shame they felt about the state of their oral health and its effect on their self-esteem: "If we have good oral health, you feel happier in yourself. We are all frightened to laugh. When we laugh, we laugh like this [puts hand over mouth] and hide our teeth when we smile" (L7).

Others noted the corrosive nature of shame from being humiliated and its effect on oral health, and they were concerned about relatives with missing or decayed teeth:

> She was really upset, she was devastated, staying home, real "shame" you know. And she finally got to go to the dentist and she didn't have any money. They did something. But then they kept sending her this bill. And she was too embarrassed because she didn't have the money so she never went back for treatment. Her teeth are just falling out. And when you are talking about self-medication, what in our family is grog and drugs, it's an excuse but it is kind of not an excuse if you are in a lot of pain. They are ashamed and they are also broke, they have got no car, they have got no money, they can't get to the dentist at 7.30 in the morning even if they tried. (L3)

Feeling shame about their oral health was exacerbated if participants were treated disrespectfully, patronized, or judged negatively by staff, which often led to avoiding dental visits altogether:

> It feels degrading and it makes me want . . . I want to see change. But this particular time I wasn't in a good mood, wasn't in a good space. I was like, "I'm not coming back." Because you will go back to the services that look after you, and if you don't get that service, you just don't go back. People don't like it . . . if you're getting bad service at that dentist, why would you go back? (L6)

For participants to return to dental services, they wanted to "feel comfortable and to feel welcomed" (L6) by the office staff and the dentist, rather than patronized. The last thing they wanted was:

> . . . another lecture on how to look after your teeth, when it's actually other stuff that keeps you from accessing [the service] in the first place. But then they just treat you like you don't know anything and like you're from another planet and they give you more lectures. . . . You are in pain, and you're there to receive health not to be lectured. (L6)

While participants in most group discussions spoke of negative experiences of oral health care, they also had strong views on what needed to change.

Enablers to Oral Health

Many participants were concerned about the state of Aboriginal children's oral health where "you see a lot of little kids who have rotten teeth" (L2). They were aware that the causes of decay involve sugary diets and drinks, in babies' bottles as well, and not brushing teeth regularly. They also knew that waiting for the child to turn 5 y before they could access the school dental service was too late:

> Yes, you got to start there, not when they get to school; half their teeth have all gone at 6 or 7 . . . so they have got to have their mouth sorted early on, and they have got to have baby teeth in place for the next ones to come down. (L1)

Prevention of disease and oral health education were considered key from pregnancy onward. However, this was not provided for most mothers. One mother of 5 had never been offered dental education or care during pregnancy. Participants in most groups valued the free public service offered by the school dental service, although not all children accessed it. Participants nonetheless felt that this type of service should be extended to include 0- to 4-y-olds:

> As part of their prenatal care, they should actually have a free dental service for these mums to be able to, use and teach them about their teeth, have a look at their teeth, and go, "Ok baby's drawing a lot of calcium out of you, which is affecting your teeth. Let's look at this now. How can we fix it?" How can we get this on board? I think this is a huge factor because educating the parents from such a young age with their babies also educates the parents. (L3)

This participant highlighted a key issue around the content of oral health education:

> We are told, "You shouldn't do this, you shouldn't do that." There isn't really a concrete understanding of how bad soft drink is for people. And I think we understand it when it starts to affect someone in our family. And then we are like "Oh, that is what soft drink does to your teeth" (L3)

Clear explanations of how to prevent oral disease, including eating a healthy diet within a limited budget and regular toothbrushing, could help parents be role models for their children. However, 1 participant felt that the responsibility did not lie just with the parents. Broader structural issues, such as upstream determinants, should also be called to account if oral health is to improve. These macro- and mesofactors affected parents' optimum oral health and included the intense and multifaceted advertising of unhealthy food to adults and children and the cost of consistently providing a healthy diet for families:

> Like what you were saying about the effect of alcohol and cigarettes, the way they use that shock tactic should be applied to sugar—if you want to get the message through, show the shocking facts about what sugar does to poor little kids and adults. (L3)

This participant had a clear vision of what needed to happen to improve the oral health of young Aboriginal children—particularly those <5 y, who were ineligible for the school dental service (even if their teeth were rotten). She called for dental services to be made available for this group and for an invitation to be sent out to parents/carers:

> By the playgroups and preschools—even if you think your kids teeth are fine—bring them in. At least check them. Once a year you should be invited in and get a free health check, dental check for these babies. So you see them at 2 years old and "Oh yes, you get a good tick," and they come in the next year and it's, "Ooh, that tooth, that's not going to last. We are going to have to do something about that." Here, they get nothing till they are 5, and that is just ridiculous. And then you are looking at dental emergencies instead of treating it when it could have been treated with a filling or whatever. And now they are in the children's hospital being put under [general anesthetic], which is dangerous and stressful, having a hospital procedure and something really painful when it could have been prevented. So it is like this great big hole in the system. This massive big hole where these kids are just falling in. (L3)

In addition to this participant's plea to the government to "help us stop something before it gets to an emergency" (L3), she argued that this approach would reduce costs of emergency treatment. She highlighted the need to increase access to care by providing services that welcomed children. This was particularly important for those struggling to make ends meet to access services in the face of competing demands:

> I think the biggest problem is, I honestly think they need to make it more family friendly as maybe a couple of days a week going, "OK we are going to have this crèche" [location where babies and young children are cared for] with 2 people on standby to look after the children. I don't have a health care card, but I am on a low income. So when you are on a low income without a health care card, you can't actually access the dentists through the health system, because you don't actually have that health care benefit. So you are actually having to fork out. You have to find that money first when you are on that lower scale of income, and you might go "OK." You might prioritize your money for your bills, your food, and your petrol. Now what you have got left over might be $100—well, I can't go to the dentist because what I need done, it's not going to cover that. Maybe the dentists need to start looking at starting a service where you can start paying off your dental work. (L3)

Discussion

Findings indicate that oral health is important to Aboriginal parents/carers who want their children to grow up with healthy teeth. This positive finding offers an opportunity for policy makers and service providers to consider how best to facilitate this. This requires reviewing current approaches to oral health for Aboriginal children where structural factors outside individual control can often compromise rather than promote oral health. Such factors include cost—and not just that of dental services, which can preclude attendance, but also that of participants consistently providing a healthy diet for their families, which is often out of reach on limited budgets. Dental services organized mainly to provide treatment do not meet participants' need to be more informed about preventing disease and promoting oral health. Aboriginal participants want more education in this area from pregnancy onward, with clear explanations about causal factors and reasons to change behavior. They also want to be welcomed and treated with respect rather than judged and blamed by health professionals if their oral health or their children's is poor.

These findings support Beck and Beck-Gernsheim's (2002) argument that, in the current neoliberal climate, individuals are held responsible for making optimum health choices. In this context, this includes conforming to biomedical and behavioral messages, such as going to the dentist for regular checkups, eating healthy/sugar-free food, and stopping smoking. Beck and Beck-Gernsheim argue that the burden of risk is projected solely onto the individual, who faces penalties for "noncompliance" that include blame and "personal failure." This argument is supported by our findings, where Aboriginal participants experience a sense of shame if their oral health is poor or are humiliated when they feel staff negatively judge and discriminate against them. This perspective reproduces the discourse that Aboriginal people are seen as the problem when they do not comply with expert professional knowledge and advice to improve their health (Playle and Keeley 1998; Durey and Thompson 2012). However, the structural factors informing Aboriginal participants' oral health choices are not addressed in this discourse. These might include discrimination from service providers, cost of dental services, difficulty of providing a healthy diet on a limited budget, and being exposed to intensive corporate advertising of high-sugar,

low-cost processed food and drinks that are a significant risk factor for dental caries. This broader perspective shifts the focus of accountability for poor oral heath in Aboriginal parents and children beyond individual responsibility to macrolevel determinants of health. Shifting the focus away from holding individuals responsible for their health choices to refocusing the lens on the broader structural context can help inform how the problem of poor oral health in Aboriginal people can be more effectively addressed.

Changing the discourse to focus on the social structure "beneath the surface" (e.g., understanding factors influencing Aboriginal people's "noncompliance") to account for events "on the surface" (not turning up for appointments) offers a more critical appreciation of the problem by locating it in a broader social context (Scambler 2007). However, addressing upstream determinants of oral health is usually avoided, such as calling governments or corporations to account for policies and practices that compromise Aboriginal parents/carers' capacity to make optimum oral health choices. While our findings indicate that participants can identify structural factors having a detrimental effect on their oral health, they are unable to change these factors as individuals. Such evidence takes the issue of poor health beyond the realm of individual responsibility to the social structure "beneath the surface" (Scambler 2007), which adds another layer to interpreting the findings. Without protection and support, ongoing experiences of shame resulting from discrimination can exacerbate rather than improve health inequities (Peacock et al. 2013).

Viewing policy and health services through the lens of oral health for Aboriginal people adds a layer of complexity to the current neoliberal argument that is symptomatic of deeper problems when the filter of race is added. Colonization has left a legacy of discrimination privileging whiteness over Indigeneity in Australia, Canada, and Aotearoa/New Zealand, where marginalizing Indigenous peoples across contexts—including health, education, and employment—continues to negatively affect health and well-being (Tuhiwai Smith 1999; Browne and Varcoe 2006; Larson et al. 2007; Pease 2010).

Inequitable power relations are sustained when discriminatory practices against Aboriginal parents and their children go unrecognized and unchallenged by policy makers and service providers who deliver health care to Aboriginal Australians (Johnstone and Kanitsaki 2009; Moreton-Robinson 2009). Such practices must be addressed for their negative effect on Aboriginal people's health and well-being and the part they play in Aboriginal people's choice to attend dental services to improve their oral health (Frankenberg 1993; Johnstone and Kanitsaki 2009; Moreton-Robinson 2009; Durey and Thompson 2012). Evidence suggests that when practitioners who are trained in Western models of health care examine their assumptions and any negative stereotypes they hold about Aboriginal people and their culture, they are less likely to project these beliefs onto their patients and more likely to challenge the status quo (Pitner and Sakamoto 2005). This offers an opportunity for dental schools to address this issue through ongoing professional development that endorses dental professionals to continue to deliver respectful care to Aboriginal people.

A way forward to address this issue from a decolonizing perspective is to privilege Aboriginal voices to understand the complexity of the social context in which many Aboriginal people live and the role that structural factors play in their lived experience, including making optimum decisions about oral health. If Aboriginal people are to willingly attend dental services, our findings suggest that health services need to deliver more than evidence-based care by instituting policies and practices that are nondiscriminatory, nonjudgmental, and respectful (Durey and Thompson 2012). Refocusing the lens in this way highlights the importance of policy makers and health practitioners being accountable for services delivered to Aboriginal people by reflecting on whether the care they offer promotes or compromises good health outcomes (Durey and Thompson 2012).

Limitations

The strength of this research was the use of a methodological approach that not only involved the collaboration of Aboriginal and non-Aboriginal researchers but also privileged Aboriginal parents' voices to better understand the barriers and enablers to oral health they face in the context of their lived experience. However, given that participants were parents of mainly preschool children, there might be differences in responses from parents of teenagers. While the research focused on Aboriginal parents living in Perth, we believe that the findings could be applicable to other metropolitan and rural Aboriginal communities in Australia and elsewhere because of the legacy of colonization and discrimination in policies and practices affecting the lives and choices of Indigenous peoples (Ramsden 2002; McGibbon et al. 2014).

Conclusion

If blaming Aboriginal people for poor oral health choices in the current neoliberal climate continues and if discrimination against Aboriginal people in health services is ongoing, health disparities between Aboriginal and non-Aboriginal Australians are likely to persist. Given the apparent intractability of the problem, juxtaposed with the national priority to improve Aboriginal health (Australian Health Ministers' Advisory Council 2015), policy makers and health service providers are well placed to reflect on their role in maintaining the problem, acknowledge its complexity, and look for innovative and effective solutions. This includes addressing the shortcomings of the neoliberal model, which focuses on individual responsibility

for health, by holding it accountable for its failure to adequately address broader structural factors informing optimum health choices (Schrecker and Bambra 2015). Engaging Aboriginal people in their health journey is a key recommendation to improving their health. This includes listening to their perspectives on barriers to oral health and suggestions for improvement—factors integral to making their voices heard, sharing knowledge, and building intercultural understanding. The Australian government's implementation plan for 2013 to 2023 aims to develop a health system flexible enough to support Aboriginal and Torres Strait Islander Australians to make healthy choices and access care that is free of racism where services proactively seek, welcome, and respect Aboriginal people (Australian Government Department of Health 2015). The challenge is whether these good intentions are matched by policies and practices that translate into sustained improvements to oral health for Aboriginal Australians.

Author Contributions

A. Durey, contributed to conception, design, data acquisition, analysis, and interpretation, drafted and critically revised the manuscript; D. McAullay, contributed to conception, design, and data interpretation, drafted and critically revised the manuscript; B. Gibson, contributed to conception, design, data analysis, and interpretation, drafted and critically revised the manuscript; L.M. Slack-Smith, contributed to conception, design, data acquisition, analysis, and interpretation, drafted and critically revised the manuscript. All authors gave final approval and agree to be accountable for all aspects of the work.

Acknowledgments

The authors are grateful to the Australian Primary Health Care Research Institute, Australian National University, supported by the Australian Government Department of Health and Ageing and to Healthway for funding this project. The information and opinions contained in it do not necessarily reflect the views or policy of the Australian Primary Health Care Research Institute or the Department of Health and Ageing. We also extend our thanks to Marlia Fatnowna for her invaluable contribution to the research, to Anne Read and Martin O'Grady for their critical review of the manuscript, and to all participants who gave their time so willingly to participate in the project. The authors declare no potential conflicts of interest with respect to the authorship and/or publication of this article.

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Durey et al. International Journal for Equity in Health (2016) 15:4
DOI 10.1186/s12939 016 0299 7

International Journal for Equity in Health

RESEARCH Open Access

Aboriginal Health Worker perceptions of oral health: a qualitative study in Perth, Western Australia

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Abstract

Background: Improving oral health for Aboriginal Australians has been slow. Despite dental disease being largely preventable, Aboriginal Australians have worse periodontal disease, more decayed teeth and untreated dental caries than other Australians. Reasons for this are complex and risk factors include broader social and historic determinants such as marginalisation and discrimination that impact on Aboriginal people making optimum choices about oral health. This paper presents findings from a qualitative study conducted in the Perth metropolitan area investigating Aboriginal Health Workers' (AHWs) perceptions of barriers and enablers to oral health for Aboriginal people.

Methods: Following extensive consultation with Aboriginal stakeholders, researchers conducted semi structured interviews and focus groups across 13 sites to investigate AHWs' perceptions of barriers and enablers to oral health based on professional and personal experience. Responses from 35 AHWs were analysed independently by two researchers to identify themes that they compared, discussed, revised and organised under key themes. These were summarised and interrogated for similarities and differences with evidence in the literature.

Results: Key findings indicated that broader structural and social factors informed oral health choices. Perceptions of barriers included cost of services and healthy diets on limited budgets, attending services for pain not prevention, insufficient education about oral health and preventing disease, public dental services not meeting demand, and blame and discrimination from some health providers. Suggested improvements included oral health education, delivering flexible services respectful of Aboriginal people, oral health services for 0–4 year olds and role modelling of oral health across generations.

Conclusion: Reviewing current models of oral health education and service delivery is needed to reduce oral health disparities between Aboriginal and non Aboriginal Australians. Shifting the discourse from blaming Aboriginal people for their poor oral health to addressing structural factors impacting on optimum oral health choices is important. This includes Aboriginal and non Aboriginal stakeholders working together to develop and implement policies and practices that are respectful, well resourced and improve oral health outcomes.

Keywords: Australia, Aboriginal, Oral health, Inequity, Racism

Background

Poor oral health in Aboriginal Australians is a significant concern, exacerbated by slow progress in reducing health disparities between Aboriginal and other Australians [1]. Evidence indicates that, despite dental caries being largely preventable, Aboriginal Australians have worse periodontal disease [2], more decayed teeth and untreated dental caries [3], with Aboriginal children having twice the rate of dental caries compared to non-Aboriginal children [4] and worse oral soft-tissue disease [5].

Various studies have identified risk factors contributing to poor oral health in this population including smoking, alcohol consumption [6] and diets high in sugar [7]. A recent study of urban Aboriginal people associated smoking and diabetes with severe periodontal disease [8]. Understanding how broader social determinants can undermine

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decisions about oral health is also important [9]. It avoids the trap of tacitly blaming Aboriginal people for their poor oral health because of 'non-compliance' with public health messages and instead recognises complex factors underpinning choice [10].

Evidence suggests lower oral health literacy is associated with worse periodontal disease [11], and limited knowledge of preventing dental disease, low socio-economic status and costly services can result in avoiding dental visits [12]. In Australia, oral health services are available in public, private and Aboriginal health service contexts. Barriers to good oral health and dental care identified by Aboriginal people include services disrespectful of cultural differences and/or with no Aboriginal Health Workers (AHWs) on staff [13]; cost, long waiting times, distance to services, especially for those living in remote areas [14], and limited access to healthy food [15]. An Aboriginal Health Worker is defined as a person of Aboriginal or Torres Strait Islander descent or who identifies as such and is accepted by the Aboriginal and Torres Strait Islander community; has a minimum qualification in Aboriginal and Torres Strait Islander primary health care and delivers care that is holistic and culturally safe [16].

Promoting oral health requires improving oral health literacy and involving Aboriginal people in designing strategies to prevent disease that are relevant and context specific [13]. A recent study of oral health care in Aboriginal Community Controlled Health Services (ACCHS) in New South Wales found that lifting the burden of oral disease in an Aboriginal community leaves more time to promote oral health [14]. However, even though dental care was sometimes accessible in ACCHS, the supply of oral health services fell very short of the demand and senior management identified that inadequate and inconsistent resources seriously undermined providing programs to treat disease and promote and sustain oral health care for Aboriginal people [14].

Relationships between health providers and their patients impact on health outcomes. A 1980s study in the US found that dentists preferred patients who were well educated, dentally sophisticated and calm, being more likely to be impatient with patients who were anxious [17]. More recent studies have shown that racism towards Aboriginal patients in health services, however inadvertent, has led to their reluctance to attend for treatment [18].

In Australia, whiteness is the 'omnipresent norm' against which differences from that norm, are measured and judged, often negatively (19: xix). White, English-speaking Australians have been privileged as a group since the colonisation and dispossession of Aboriginal Australians by the British in 1788. Indigenous rights and occupancy were ignored ("terra nullius") and British authority determined policies and practices [19]. Being white provided structural advantage, usually invisible to those who were white, and reproduced inequities [19, 20] that continue to shape the lives of the privileged and the marginalised [21].

Interpersonal racism is being treated unfairly for being Aboriginal; internalised racism occurs when non-Aboriginal people's racist assumptions and beliefs are incorporated into an Aboriginal person's worldview; systemic or institutionalised racism is evident when differential power relations between Aboriginal and non-Aboriginal groups compromise Aboriginal people's access to goods, services and opportunities [22]. Racism disproportionately affects Aboriginal Australians across sectors including education, employment [23] and health services where it often goes unchallenged and unreported [24] despite its harmful health effects [25, 26]. Government commitments to reduce discrimination against Aboriginal people often fall short and examples persist of Aboriginal health being under-resourced relative to need; inequitable treatment between Aboriginal and other patients; culturally inappropriate care; inadequate or no cross-cultural education of health care providers; market-driven health care provision; and models of individual care that prioritise diagnosis, treatment and cure rather than prevention [10]. One study called for physicians to critically reflect on their own assumptions about Aboriginal people and whether they were discriminatory based on race. The objective of such reflection was to avoid projecting any unconscious bias onto their patients that could negatively impact on their care [27].

The aim of this paper is to present findings from a qualitative study conducted in Perth, Western Australia, which investigated AHWs' perceptions of barriers and enablers to oral health for Aboriginal people based on their professional and personal experience. The paper identifies whether AHWs' responses support or challenge existing evidence and includes their suggestions for improving Aboriginal people's oral health.

Ethics approval for this research was granted by the Human Research Ethics Committee at the University of Western Australia (RA/4/1/5792) and the Western Australian Aboriginal Health Ethics Committee (No.467).

Methods

Following an extensive consultation process with key Aboriginal and non-Aboriginal stakeholders during 2013–2014, researchers followed up on contacts in various health services in Perth to invite AHWs to participate in semi-structured interviews or focus groups. A group discussion or interview was chosen depending on the workplace and the number of AHWs employed there. Where one AHW was employed an interview was offered, two or more AHWs were offered an interview together and a group discussion was offered where several AHWs worked at one site. No participant in a group discussion requested an individual interview. A follow

up interview was conducted with one participant based on her past experience working with pregnant Aboriginal women. Thirty five health workers (28 females and seven males) from 13 different sites agreed to participate and were interviewed either by an Aboriginal or non-Aboriginal researcher or, where possible, by both. The lower number of male participants reflected the fact that there are nearly three times as many female AHWs employed as male in Australia [28]. Participants were given information about the project and invited to ask questions prior to signing consent forms to participate in interviews or focus groups. These were recorded, transcribed and imported into NVivo, a software programme to assist in the organisation and management of data during the analysis (http://www.qsrinternational.com).

Interview and focus group questions covered demographic characteristics (age, gender, highest education qualification, years working as an AHW, postcode) and topics including the meaning of oral health; issues facing Aboriginal people and their children related to oral health; the impact on oral health of diet, smoking and alcohol; challenges in promoting oral health and how oral health/dental services could be improved. Data saturation was reached after eight interviews and four focus groups, with no new relevant information emerging.

Responses were analysed independently by two researchers for themes related to barriers and enablers to oral health. Using an iterative approach, these were compared, discussed, revised and organised under key themes; any anomalies were noted in responses and data revisited and interpreted for meanings attributed to AHWs' perceptions. Findings were then summarised and interrogated for similarities and differences and compared with existing evidence in the literature. Participant information was de-identified, abbreviated and classified numerically into Aboriginal Health Worker Female (AHWF) 1–28; Aboriginal Health Worker Male (AHWM) 1–7.

Results

Interviews or focus groups involving male and female AHWs were held at participants' workplaces. Responses highlighted how broader structural issues played a key role in choices around oral health and accessing services. We define structure as social, political and economic factors beyond the control of individuals yet which can adversely affect their health [29]. These included lack of education about oral health and disease prevention, public dental services not meeting the demand for care, discrimination by health providers and financial constraints that negatively impacted on decisions related to oral health. Suggested structural improvements included education on promoting oral health and disease prevention across the life span, free oral health services for 0–4 year olds and easier access to oral health services. Other enablers to oral health included health providers offering holistic, non-discriminatory, respectful care that was sensitive to the social and cultural contexts of Aboriginal people's lives, encouraging role modelling of good oral health practice in families across generations and providing relevant and culturally sensitive materials to promote oral health.

Structural barriers

Aboriginal people face numerous and well-documented structural barriers to maintaining oral health and accessing care including education, cost of services and discrimination by health providers. Most participants felt education about oral health and preventing disease was limited at best and often non-existent. This lack of knowledge had serious consequences for oral health including for those diagnosed with other comorbidities:

> When we were diagnosed with diabetes, we weren't even told that our teeth were an issue by the doctor (AHWF3).

This highlights the concept of inter-professional practice (e.g. medical/dental, dental/AHW) in improving overall health outcomes. Oral health was often not included in AHW training even though participants acknowledged that dental caries was a huge issue from pregnancy onwards in their communities. Dental disease was often compounded by structural issues beyond their control, not least the lack of oral health care in Western Australia for the 0–4 age group apart from private clinics and emergency services. Most participants acknowledged the benefits of free school dental services, accessible only to children in the year they turn five until Year 11 in high school. Cost for private and public services was a significant barrier to access:

> Honestly it is too expensive. I have got three holes in my teeth, cavities, and I cannot afford to go to the dentist. Because my money is going on things that I think are more important like my house, power, everything else, food (AHWF8).

Accessing public dental services, even at ACCHS often required long waiting times and was compounded when transport was unavailable:

> You have to be one of the first five in, in the morning otherwise you don't get to see the dentist you have to wait for the next day. So they do struggle to get in there because you have to be in there by eight o'clock in the morning (AHWF14).

Cost and access to dental services were more burdensome for parents or carers looking after several children which often made attendance difficult, particularly without a creche:

> More than likely you are not only going to be taking that child, but you will be taking other children with you. And when you are out for a couple of hours you have to have money for all of you because you have got the issue of food – it is a costly thing (AHWF13).

Even though participants understood the importance of preventing oral disease, accessing dental services for prevention was not a priority *'because realistically how many people are going to go to the dentist if there is no pain?' (AHWF7).* This point was further elaborated in the context of general health care:

> If we look at access to health care – a lot of them won't go to the doctor until something is seriously wrong. So if they are not going to do that in general day to day health, you've got Buckley's of getting anyone going to see the dentist. 'Oh, I need to go and see a dentist for an appointment just for my regular check-up' – it's not going to happen (AHWM3).

Other barriers to accessing care included perceived racism from health providers towards Aboriginal people and the apprehension this triggered:

> You don't want doctors and nurses judging you. They might not say it verbally but by looking at you (AHWF12).

Some participants felt patronised and judged by dental professionals that often led them to feel angry, humiliated, shamed and culturally unsafe:

> Aboriginal people, when they walk into the dentist, it is that shame factor and they think they are being judged by the dentist, you know,'when was the last time you saw the dentist?' 'Do you brush your teeth? and 'Your teeth aren't healthy'. And these are adults – 'And your gums aren't healthy' so the dentist is telling adults. And the adults are going home thinking 'well, do I send my child there?' (AHWF8).

For others, this kind of treatment exacerbated a transgenerational fear that their children would be removed because, as a parent, they felt health providers judged they had neglected to adequately care for their child's teeth. One participant commented that a question asked of Aboriginal parents attending a hospital with their child was whether they were *'under the Department of Child Protection' (AHWF11).* She hoped this question was asked of all non-Aboriginal parents as well, but was unsure. The fear attributed to the question related to:

> If they see it as neglect or something, they have got the power there to keep that kid away from you (AHWF12).

The legacy of colonisation and discrimination persists for Aboriginal people based on racial and cultural differences. Historically white, Anglo-Australian authorities forcibly removed Aboriginal children from their parents from the 1890s through to the 1970s [30], the so-called 'stolen generation'. The negative effects of this are still experienced across generations in Aboriginal families [30] as reflected in the following comment that:

> … you could go in there with your child and you could go out *without* your child. (AHWF11).

Participants' responses indicated that health providers seemed to have little understanding of the historic and social context of their lives.

Social factors

The importance of oral health emerged as a key theme that impacted on a sense of wellbeing:

> People are concerned about their teeth – if they are painful, or they are ugly or they don't want to smile because they have teeth missing (AHWF21).

Yet public health messages about the need for a healthy diet to prevent dental caries often lacked awareness of the lives of many Aboriginal families who juggled competing priorities including sharing food on a tight budget that stretched existing resources *'because you never know who is going to turn up at the door hungry' (AHWF17):*

> Fruit, veggies, it is all expensive. It is cheaper to buy a dollar packet of chips than it is to buy a bag of apples (AHWF22).

Many participants struggled to make ends meet, despite regular employment, and this impacted on their decision around oral health:

> If we talk about Aboriginal people who work in the workforce, then you have to pay a lot more to go to the dentist. That would come last on your list of priorities not only because of all the other health issues you may have yourself, but within your family, you can't afford to go to the dentist. That would be

your last health thing that you would be concerned about. It would be better just to have your teeth ripped out (AHWM1).

Participants were concerned about alcohol and other drugs, particularly the use of methamphetamine or 'speed' in young people and the lack of information of its oral health effects:

…because you have a lot of young people where their teeth are absolutely rotting and falling away through speed (AHWM1).

Participants discussed Aboriginal families in their care who lived in unsettled, crowded environments, often moving between locations, making it difficult to buy, store and cook healthy food:

A lot of families that we see are not settled families, so maybe they are not living in their own accommodation, maybe they are sharing a house with a lot of other people. Just the stability – they might be home for one night or a week then they are over at Aunty's house and staying for a week. So you have that on-the-go, moving around. It's convenient just to grab the kids something to eat on the way to jump on the bus to go to Nan's house instead of paying that money. You have got nowhere to store fruit and veggies or meat (AHWF13).

This type of environment also made it difficult to maintain oral health in other ways:

Something to do with lots of people sharing your house and not much private ownership of stuff. And even if you left your toothbrush in the bathroom, who do you know has used it? You can't presume because it is yours and you leave it somewhere that no one is going to use it or play with it or it is going to end up outside. So that is pretty hard for people (AHWF10).

For many participants, toothache, when it did occur, often resulted in self-medication rather than visiting a dentist:

A lot of people I come across … they are happy to just continuously eat pain killers like they are going out of fashion …I've met a lot of people in the community who go 'oh well, my gum is hurting and I am just going to take pain killers' where they should be replacing them with antibiotics. (AHWF2)

Participants also commented they managed pain themselves to avoid going to the dentist:

Because if I rush straight off to the dentist, nine times out of ten I am going to get it pulled because that is the cheaper option … I don't want my tooth pulled. I want to keep my teeth (AHWF22).

Nonetheless, dental extraction seemed common from a young age because of caries:

Seeing kids with a lot of decay and seeing kids having to have their teeth pulled at a young age. Having to go to surgery and have their baby teeth pulled out because they are rotten (AHWF13).

This method of treatment continued into adulthood:

For Aboriginal families we don't go to the dentist until the tooth is ready to come out basically. You know you have got abscess, you put up with the pain, you put up with the, you know, you self-medicate yourself, only when your face is swollen …. and you see people with their face that is swollen because they have got an abscess … and that is children as well as adults.(AHWF12).

Participants also suggested various options to improve oral health in Aboriginal families.

Improving oral health for Aboriginal people

Oral health promotion programs did exist and were effective up to a point, for example increasing its focus during a *'dental health month'(AHWF7)* or AHWs implementing the 'Lift the Lip' [31] program for children under five years:

If they come in we can lift up their lip and check if there is plaque and we can see what their teeth are like … we can refer you and point you in the right direction but it's the parent who has got to take ownership and do the rest of it (AHWF12).

All participants agreed about improving oral health education for their community from pregnancy onwards and presenting information in cost-effective ways that respected cultural differences. These included visual representations of oral health, photographs comparing healthy and decayed teeth and using flip charts. General health promotion needed to include oral health content starting with check-ups for pregnant women and continuing throughout the life-span for men and women.

Pictures, pamphlets with pictures. I always try to use pictures as much as I can and I yarn, that's how I get through, because I'm out in the community (AHWF6)

> I find a lot of those pictures that really show abnormal to normal – they sort of hit home. And too much writing in a pamphlet - you just need something on a small pamphlet that is to the point (AHWF2).

A one-size-fits-all approach to dissemination was considered ineffective and targeting information to those most in need was key:

> It is the way it is publicised out in the community as well. A lot of people have smartphones that just hop on the internet but then there are a lot of people who aren't familiar with the internet …You need to make sure it is filtering down to the different groups … but also include the people that are halfway there in terms of education. To me it appears that the people who need it the most are really not grasping where it is being advertised. Like it is not being advertised on their level. So, advertising filtering out to the people that are out there at that community level (AHWF2).

Employing Aboriginal Health Liaison Officers who focused specifically on oral health in health services was another suggestion:

> Health liaison officers are all focused on diabetes and heart disease …where I think oral hygiene needs to have their own specific oral health liaison officers. If you had oral health liaison officers that actually went out into people's homes and out in to the community and have done these assessments and education, imagine how much easier it would be; they are in their home already. They're knocking on the door going into the home, how easy would it be to talk about oral hygiene? Because I know a lot of our mob don't talk about oral hygiene in their homes (AHWF6).

Other suggestions included making oral health promotion fun and interactive by using educational games on smartphones and computers, reducing red tape to access services, more free dental services, incorporating oral health into Aboriginal child and adolescent general health check-ups:

> So it is more of a preventative screening where you don't have to be sick, you just go anyway and take children in. But I think there should be a similar thing around dental where every year, whether it is through Medicare or wherever, where people can go and get a screening test done every 12 months, and that is covered … Just like when people have their eyes checked you can go every 12 months – then it should be the same for dental (AHWF7).

Empowering parents to become role models of good oral health practice was another suggestion:

> I think that's the biggest thing. It is that role modelling. We need to get out into the community and get some role modelling and some good presentations (AHWF20).

Other ideas for promoting oral health included distributing dental packs (toothbrush, toothpaste and floss) at community events, festivals and open days and offering outreach services such as a dental van to visit kindergartens and sports events in the Aboriginal community:

> So it goes to the areas or people that need it the most, having some sort of 'meet us in the middle' type thing …Outreach services have quite a lot of success. …We actually have a van that comes to our football club that is a travelling dentist so everyone lines up to have their mouthguard fitted. It's great. As parents we think it is great. We don't have to take a trip to the dentist because he is there (AHWF6).

Several participants thought oral health could be advertised more on TV and that schools could play a greater role in promoting oral health including posters in the classroom and regular teeth brushing:

> I reckon school is probably the best I think – because if you educate the kids and get them into the routine of doing it. Sometimes there are issues around cost especially if you have five kids that you have to get toothbrushes and toothpaste and kids waste things as well … So knowing if they could get their teeth brushed at least one day a week from Monday to Friday in the full, that is better than not getting teeth brushed at all (AHWF7).

Limitations

AHWs working in rural and remote locations were not interviewed. While this study was limited to Western Australia, we believe that the findings would, given the legacy of colonisation and discrimination, apply to other Aboriginal communities in Australia. We also suggest they could be applied to indigenous populations in other colonised countries such as Canada and New Zealand [32, 33].

Discussion and conclusion

Participants' responses indicate that oral health is important to Aboriginal people and current policy and practices are falling short in improving oral health outcomes. Key structural barriers identified by AHWs included insufficient education about oral health promotion and disease prevention. Private dental practice was considered out of

reach financially for many Aboriginal people and public dental services were not meeting their oral health needs, were often hard to access without transport, incurred a cost and had no facilities for parents or carers with babies and young children. For some, the attitudes of health providers towards Aboriginal patients were also perceived as discriminatory. Dentists were seldom visited for check-ups and prevention. Instead, dental care was generally accessed only in an emergency when there was severe pain. Where possible, participants managed their own dental pain with analgesia and avoided dental visits partly from fear their teeth would be extracted. Given the prevalence of dental caries in many Aboriginal people, this was a reality and dental visits often resulted in tooth extraction, a cheaper option than tooth restoration according to some participants.

Other barriers included competing socio-economic priorities that impacted on decisions related to oral health for Aboriginal people. This suggests that improving oral health outcomes rests on more than 'compliance' with public health messages and implementing evidence-based interventions [10]. Instead, promoting and maintaining oral health is contingent on addressing a range of complex structural and social factors that are often ignored yet play a key role in decisions about oral health in this population. Our findings suggest that changing practice to promote oral health and prevent disease in Aboriginal people must be a shared responsibility between Aboriginal and non-Aboriginal Australians where non-Aboriginal policy makers and health care providers seek to understand the lived experience of Aboriginal Australians rather than making negative assumptions, judgements or inferring blame [34]. Locating poor oral health in Aboriginal people within a broader systemic framework reveals that current health care can undermine rather than promote oral health in this population and may not be respectful of cultural differences [27]. However, health providers and policy makers may be reluctant to examine their role in disadvantaging Aboriginal clients, not least if it suggests they are part of the problem [35].

AHW participants also suggested structural improvements such as disease prevention across the life span from pregnancy and education on how to promote oral health. This would include developing materials for oral health promotion that are relevant and culturally sensitive. Other suggestions included free oral health services for 0–4 year olds, inter-professional practice where oral health was part of general health checks, encouraging trans-generational role modelling of good oral health care, facilitating access to oral health services and ensuring services were respectful of Aboriginal people. This solution focused approach might also include health providers critically examining their own assumptions about Aboriginal people that could detrimentally impact on their care [10, 36] and adopting a holistic, non-discriminatory approach to care that is sensitive to Aboriginal peoples' social and cultural contexts.

Participants thought a one-size-fits-all approach to dental services for Aboriginal people was inappropriate and required a more flexible, inter-professional model of education, prevention and treatment. This includes reviewing the current model of dental education for its ability to deliver care that is context specific, without prejudice and respectful of racial and cultural differences. Adopting a solution focused approach is a step towards providing a foundation for Aboriginal and non-Aboriginal stakeholders to work together in partnership to develop and implement policies and practices that are relevant to Aboriginal people, well-resourced and translate into sustained improvements to their oral health outcomes.

Competing interests
The authors declare that they have no competing interests.

Authors' contribution
AD contributed to the data collection, analysis and interpretation, drafted the initial paper, provided intellectual content and revised subsequent drafts to final submission. DM contributed to the conception and design of the research, and revised drafts of the manuscript for intellectual content. BG contributed to the analysis and interpretation of data and revised manuscripts critically for intellectual content; LSS devised the original project, contributed to the concept and design of the study, assisted with data collection and analysis and critically reviewed drafts for intellectual content. All authors read and approved the final manuscript.

Acknowledgements
We are grateful to both the Australian Primary Health Care Research Institute, supported by the Australian Government Department of Health and Ageing and to Healthway for funding this project. The information and opinions contained in it do not necessarily reflect the views or policy of the APHCRI or the Department of Health and Ageing. Dr Durey was supported by APHCRI and Healthway. We also extend our thanks to Marlia Fatnowna for her invaluable contribution to the research and to Anne Read for her critical review of the manuscript and to all participants who gave their time so willingly to participate in the project.

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Received: 17 July 2015 Accepted: 7 January 2016
Published online: 12 January 2016

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Community Dental Health (2016) **33,** 161–163
Received 7 March 2016; Accepted 1 April 2016

doi:10.1922/CDH_3717Durey03

The mouth as a site of structural inequalities; the experience of Aboriginal Australians

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Objective: To address the mouth as a site of structural inequalities looking through the lens of Aboriginal Australian experience. ***Research design:*** This is a critical review of published literature relevant to our objective. Criteria for selection included articles on: the social context of oral and general health inequalities for Aboriginal Australians; Aboriginal perceptions and meanings of the mouth and experiences of oral health care and the role of the current political-economic climate in promoting or compromising oral health for Aboriginal Australians. ***Results:*** Evidence suggests oral health is important for Aboriginal Australians yet constrained by challenges beyond their control as individuals, including accessing dental services. Competing demands on limited budgets often led to oral health dropping off the radar unless there was an emergency. ***Conclusions:*** Structural (social, political and economic) factors often inhibited Aboriginal people making optimum health choices to prevent oral disease and access services for treatment. Factors included cost of services, limited education about oral health, intense advertising of sugary drinks and discrimination from service providers. Yet the literature indicates individuals, rather than structural factors, are held responsible and blamed for the poor state of their oral health. The current neoliberal climate focuses on individual responsibility for health and wellbeing often ignoring the social context. To avoid the mouth becoming an ongoing site for structural inequality, critically reviewing oral health policies and practices for whether they promote or compromise Aboriginal Australians' oral health is a step towards accountability-related oral health outcomes.

Key words: *inequalities, structural factors, oral health, health services, Indigenous*

Introduction

> "*Oral health is a mirror of systemic health, is related to health and disease throughout the body, and is critical to social and economic functioning at all stages of life*." (Kahn, 2013; p55)

We draw on this perspective of oral health to explore the mouth as a site of structural inequalities. Kahn (2013: p55) goes on to describe oral disease as the "silent epidemic". Poor oral health and inadequate access to services persist across the life-span for Australia's Aboriginal and Torres Strait Islander (hereafter Aboriginal) population (Jamieson *et al*., 2010; Roberts-Thomson *et al*., 2008), raising questions of where the problem lies. Despite government commitments to improve oral health, inequalities and significant morbidity persist for Aboriginal Australians suggesting a 'wicked' or intractable problem that is complex and requires innovative solutions (Department of the Prime Minister and Cabinet, 2016; Rittel and Webber, 1973).

If we assume that a measure of good oral health is absence of tooth decay and that dental caries is preventable, at least in theory, and if we follow evidence-based public health messages to maintain oral health including eating a healthy diet with a low sugar intake, tooth-brushing and stopping smoking, then we need to explain why there is a higher rate of dental disease, higher levels of untreated caries, more missing teeth and worse periodontal health or gum disease in Aboriginal compared to non-Aboriginal Australians (Jamieson *et al*., 2010; Roberts-Thomson *et al*., 2014). Understanding why inequalities in oral health persist between Aboriginal and non-Aboriginal Australians is important, so that such inequities might be suitably addressed in culturally-safe ways.

In Australia, colonisation has left a legacy of discrimination or racism where Aboriginal people continue to be marginalised across a range of social indicators including health, education and employment with ongoing negative effects on health and wellbeing (Saggers and Gray, 2007). White, English-speaking Australians have been privileged as a group since the colonisation and dispossession of Aboriginal Australians by the British in 1788. Aboriginal rights and occupancy were ignored ("terra nullius") and British authority determined policies and practices (Moreton-Robinson, 2009). Being White provided structural advantage, usually invisible to those who were White, and reproduced inequities that continue to shape the lives of the privileged and the marginalised. Such advantage is often taken for granted, unnoticed and unexamined by those who benefit (Moreton-Robinson, 2009; Pease, 2010). However, the legacy of colonisation and discrimination impacting on Aboriginal people's lives across generations is generally ignored, so policies and practices that can compromise oral health are often not called to account for socio-economic and political factors that can adversely affect health yet are beyond individual control (White, 2002).

Given that oral health mirrors systemic health, this paper explores whether Aboriginal perspectives and meanings associated with oral health reflect the mouth as a site of structural inequalities.

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The mouth and structural inequalities – contextual literature

Repeated Australian governments have committed to Closing the Gap in health inequalities between Aboriginal and non-Aboriginal Australians through building partnerships between governments, service providers and local Aboriginal stakeholders (Council of Australian Governments, 2008). Yet the Prime Minister of Australia's 2016 report on "Closing the Gap" in Aboriginal disadvantage found little improvement in life expectancy with Aboriginal Australians dying at least ten years earlier than non-Aboriginal Australians (Department of Prime the Minister and Cabinet, 2016). Equity in health service use is an international priority (Starfield, 2011) yet evidence suggests that Aboriginal people may be reluctant to attend services for treatment because of discrimination from service providers (Durey *et al*., 2016; Shahid *et al*., 2009). Inequalities in health care raise questions about the appropriateness of current oral health practice for Aboriginal Australians who are offered fewer procedures for diagnosis and treatment for disorders such as cancer and are less likely to attend dental services than other Australians (AIHW, 2015; Boffa, 2008). Yet, the problem of poor oral health is often blamed on Aboriginal people's 'non-compliance' with evidence based public health messages – if only Aboriginal people would stop smoking, brush their teeth, and eat a healthy diet to reduce sugar intake then they wouldn't have a problem (Durey *et al*., 2016). However, the reality is more complex.

The current neoliberal political and economic climate has increasingly focused on individual responsibility to make optimum health and lifestyle choices (Schrecker and Bambra, 2015). This would include individuals making optimum oral health choices by regular attendance at the dentist for check-ups, eating healthy, sugar free food and brushing and flossing regularly. According to Beck and Beck-Gernsheim (2002; p24), penalties for 'non-compliance' with such public health messages to stay healthy are 'blame' and 'personal failure'. This neoliberal focus on individual responsibility for health reproduces the discourse that Aboriginal people are seen as the problem for not making good oral health choices or, if they see a dentist, not complying with expert advice to improve their oral health (Durey *et al*., 2016; Playle and Keeley, 1998). What is avoided in this discourse are the socioeconomic and historic inequities impacting on Aboriginal people's lives and collective experiences of discrimination including in healthcare (Durey *et al*., 2016).

The mouth and structural inequalities – Western Australian research

Qualitative research on Aboriginal people's experience of the mouth as a site of structural inequalities is limited and what exists highlights the need for Aboriginal people's voice to be heard in the current discourse to avoid misrepresentation. Findings in a recent paper indicated that oral health was important for Aboriginal participants with many people looking after their oral health by regular tooth brushing, avoiding sugary drinks and not smoking. However, they also faced challenges maintaining oral health and accessing services that included discrimination from health providers, competing demands on limited budgets such as food for the family and paying rent often resulting in oral health dropping off the radar (Durey *et al*., 2016).

Recent qualitative research on Aboriginal Australians' perceptions identified barriers to maintaining oral health (Durey *et al*., 2016). Accessing oral health care was a key theme and the model by Harris (2013) was used to explain access through the lens of opportunity, use of services, equity and outcomes. Findings indicated opportunities for accessing care were constrained by limited availability of public dental services for Aboriginal adults, often with long waiting lists or waiting times where the focus of care was on treating rather than preventing disease. Participants were aware of no public oral health services for 0-4 year olds apart from emergency hospital care. Use of services was constrained by cost with private services generally out of reach financially and public services often incurring a co-payment. Aboriginal participants' perceptions that they were discriminated against by health providers also reduced access. Findings also indicated that despite evidence of poor oral health for Aboriginal Australians, demand for services was not met by supply; the system of oral health care in Western Australia is mainly a private model of treatment with limited public oral health services including those related to education on prevention. Many participants who accessed oral health care privately or publicly perceived health providers discriminated against them for various reasons – they felt judged for the state of their oral health, for being Aboriginal or for bringing children to the service. Despite the importance of oral health, preventing oral disease was also constrained by high cost of healthy diets on limited budgets and intense marketing of sugary products. This often led to participants accessing dental services for treatment not prevention, oral health being compromised by little or no education on preventing disease and promoting health. Discrimination from health providers often led to a sense of 'shame' and humiliation and a reluctance to attend the service for follow up appointments (Durey *et al*., 2016).

Discussion

Structural inequalities informing Aboriginal Australians' decisions about oral health lead us to question how future discourse will be framed. While structural factors such as discrimination, cost of services and limited education to promote oral health can act as barriers to making optimum oral health choices, Aboriginal people felt they were held responsible for the state of their oral health, often feeling blamed and judged by health providers (Durey *et al.,* 2016).

Ongoing health inequalities between Aboriginal and non-Aboriginal Australians call into question the effectiveness of a neoliberal model placing responsibility on individuals to make optimum health choices. Implicit assumptions of a level playing field for all Australians are reinforced when the social, historic and economic contexts of Aboriginal Australians' lives that inform choices are ignored. The WHO Commission on Social Determinants of Health (CSDH, 2008) clearly states that structural conditions inform lived experience and are responsible for significant health inequalities.

According to Schrecker and Bambra (2015), neoliberalism can actually make people sick by not addressing structural inequalities that underpin choices. Responding appropriately to poor oral health for Aboriginal Australians as a 'wicked' problem takes into account the social context of their lives that is informed by broader structural issues. Evidence suggests ongoing racial discrimination including in health services, is harmful to health and wellbeing (Johnstone and Kanitsaki,

2009) and can result in Aboriginal people choosing not to attend services (Durey *et al*., 2016; Shahid *et al*., 2009). For a new discourse to emerge, discriminatory policies and practices towards Aboriginal people that are unrecognised and unreported by policy makers and service providers, despite the harm they can cause, need critical review if oral health inequalities between Aboriginal and non-Aboriginal Australians are to improve.

Given that discrimination and cost, for example of providing a healthy diet for families, influence choices about oral health, research suggests more is needed than just delivering evidence-based interventions that may ignore the significant role structural issues play in informing such choices. A step forward is for non-Aboriginal policy makers and health providers to engage with Aboriginal stakeholders around oral health policies and practice and reflect on any unconscious bias that undermines rather than promotes the health and wellbeing of Aboriginal Australians (Durey *et al*., 2016). Unconscious bias towards the dominant neoliberal view that focuses on individual responsibility to make good health choices doesn't take into account the social context of people's lives that can compromise those choices and further disadvantage those who are already marginalised. Given that Aboriginal people are often held responsible for not making the 'right' choices and thereby tacitly blamed, reflects the invisibility of privilege that ignores power relations inherent in the broader structural factors that disadvantage some groups while benefiting others (Pease, 2010). The objective of such reflection is to avoid projecting any negative beliefs onto Aboriginal people that could damage their health and wellbeing (Pitner and Sakamoto, 2005).

Oral health policies and practices must be critically reviewed for inequalities in care. This requires shifting the focus away from Aboriginal people being held responsible for their health choices to refocusing the lens onto the broader structural context that can inform how the problem of poor oral health in Aboriginal people can be more effectively addressed. Policy makers and health providers committed to providing care that is non-discriminatory, non-judgemental and respectful of Aboriginal people and their lived experience is important if attendance at dental services is to increase and health outcomes improve. Without this commitment, inequalities are set to continue.

Acknowledgements

We are grateful to both the Australian Primary Health Care Research Institute, supported by the Australian Government Department of Health and Ageing, and to Healthway for supporting this research. The information and opinions contained in it do not necessarily reflect the views or policy of Healthway, the APHCRI or the Department of Health and Ageing. Dr Durey was supported by APHCRI and Healthway. We also extend our thanks to the valued colleagues contribute to our thinking in this area.

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Received: 11 May 2022 | Revised: 16 August 2022 | Accepted: 1 October 2022

DOI: 10.1111/hsc.14070

Health and Social Care in the community WILEY

ORIGINAL ARTICLE

Community-centred oral healthcare for adults experiencing homelessness in Australia: Perceptions and experiences of key stakeholders

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Abstract

The objective of the study was to identify whether creating a responsive, respectful and trustworthy environment that provides free dental care for clients who are homeless using volunteer dental professionals was effective in meeting their oral health needs in Fremantle, Western Australia. Qualitative research conducted between October 2018 and August 2019 was guided by a social constructivist paradigm to gather and analyse data. Semi-structured interviews were conducted with adults experiencing homelessness accessing a community dental clinic and health providers and other stakeholders involved in its establishment, management and service delivery. An inductive approach to analysis was used to organise themes under the categories of 'establishing the oral health clinic' (OHC) and 'responses to the implementation of the clinic' Thirty-nine semi-structured interviews were conducted across eight participant groups: clients, executive management, the oral health clinical reference group, volunteer dentists, employed staff, nursing students, volunteer staff and other stakeholders. Key findings across all groups included positive responses to the establishment and implementation of the OHC, the quality of care and the safe and respectful environment in which services were delivered. Challenges related to sustainability include uncertainty around ongoing funding and recruitment of dental professionals. Whilst volunteer dental services fill a gap in meeting the complex needs of this population group, mainstream services must consider and address issues of equity in this context. Findings can be used to guide this process that includes creating environments of respect and trust where adults who are homeless or at risk of homelessness feel safe, welcomed and more likely to return to the service.

KEYWORDS
community care, homelessness, inequity, oral health, qualitative research

1 | INTRODUCTION

Homelessness is a health and social problem in Australia variously defined as sleeping rough outside or in improvised dwellings such as tents, overcrowded housing or temporary lodging (Australian Bureau of Statistics, 2018; Davies & Wood, 2018). Homelessness from living in overcrowded dwellings is increasing in Australia, particularly amongst adults aged 55–74 years (Australian Bureau of Statistics, 2018; Pawson et al., 2018). Growing numbers of adults are also at risk of homelessness due to family and domestic violence

and structural issues such as poor housing affordability and precarious employment (Pawson et al., 2018). The effect of homelessness on a person's health and well-being is described as 'profound and compounding' (Davies & Wood, 2018, p. 230). Adults experiencing homelessness are at greater risk of premature mortality, infectious diseases, mental health disorders, substance misuse and non-communicable diseases (Fazel et al., 2014).

Oral health for adults facing homelessness may not be a priority with treatment often only accessed for pain or in an emergency; however, the impact of oral disease on overall health and well-being is concerning (Goode et al., 2018). Oral health disorders are broad and include dental caries, gum disease and other oral cavity problems where risk factors include a poor diet, tobacco smoking and alcohol use (Caton et al., 2016; Fazel et al., 2014; Priyanka et al., 2017; Shekarchizadeh et al., 2013). Oral disease affects the quality of life, disrupting speech, communication, self-image and social functioning (Mouradian, 2001; Selwitz et al., 2007). Tooth loss and oral pain are common for all age groups experiencing homelessness (Freitas et al., 2019).

A Brazilian study found that poor oral health undermined daily activities amongst adults experiencing homelessness compared to the overall population. Specifically, this is related to difficulty eating, shame and reluctance to smile due to the need for an upper prosthesis (Lawder et al., 2019). Other evidence suggests key barriers to adults experiencing homelessness accessing dental care were structural (such as requirements to register for government dental care and cost of services); organisational (being treated disrespectfully by dental health service providers); and personal (dental care, not a priority, with only emergency care accessed for treatment) (Goode et al., 2018; Mago et al., 2018; Paisi et al., 2019).

Public dental services often have long waiting lists and fixed appointment systems, are costly, and expect clients to adapt to the requirements of the service. Failure to comply, including difficulties clients may face completing appropriate forms or settling outstanding debts incurred for previous treatment, often result in negative responses from staff where the client feels disrespected, judged and blamed (Durey et al., 2016). Unsurprisingly, clients are unlikely to return particularly when other demands such as paying for food compete with oral health needs which subsequently becomes less of a priority (Charnock et al., 2004; Hede et al., 2019). Acknowledging the 'cultural incompatibility' of fee-for-service models of dental care for low-income and homeless communities offers an opportunity to consider more appropriate community-based clinics to better meet the needs of these populations (Wallace & MacEntee, 2012).

One option is to locate dental services near disadvantaged populations with dental professionals being more patient centred in how they deliver services (Christian et al., 2015; Goode et al., 2018). Evidence suggests that meeting this group's urgent oral health needs requires publicly funded preventive and restorative dental care and training dental professionals to work in this context (El-Yousfi et al., 2019; Freitas et al., 2019). However, progress is slow, often hindered by a lack of political will or complex and unwieldy bureaucratic requirements (Hede et al., 2019; Scrine et al., 2019). Other options include more information about community dental clinics,

What is known about this topic

- Oral health is poorer in adults who are homeless.
- Costs of dental treatment are often prohibitive for people experiencing homelessness.
- Adults who are experience homelessness often find it challenging to navigate dental services.

What this paper adds

- For adults who experience homelessness, this paper describes a community-centred model of free dental care involving volunteer dentists.
- Findings indicated clients did not feel judged by health providers in this context
- Findings indicated a community-based service could often better meet the needs of people experiencing homeless than centralised services.

respect rather than discrimination from the dental and other health providers (Mago et al., 2018), earlier interventions, more focus on prevention and a shared and coordinated approach to the health and well-being of adults experiencing homelessness (Davies & Wood, 2018). This suggests that, at least in the interim, alternatives are needed to current models of dental care if access to services by this population group is to increase.

Given the plethora of evidence on the need to address social inequalities, Marmot has advocated for more action to improve the health of disadvantaged populations rather than just more research (Marmot, 2015). Inequitable power relations between the socioeconomically privileged and the disadvantaged 'other' need disruption from a social justice perspective where each is instead treated as people of equal worth. Translating knowledge about social justice into equitable service delivery can improve access and oral health outcomes for adults who are homeless or at risk of homelessness and contribute to human flourishing (Anderson et al., 2009). This is particularly pertinent when the intersection between poverty, homelessness and suffering can inhibit accessing oral healthcare (Wallace & MacEntee, 2012) yet disadvantaged social groups are often blamed for their poor health, rather than the socioeconomic or structural context in which their lived experience is embedded (Hochlaf et al., 2019).

Dental care in Western Australia comprises various services: private, where treatment may be covered by insurance; public or government-funded services (including hospital emergency departments where treatment can occur) usually requiring a co-payment from clients and free dental services provided by Aboriginal Community Controlled Health Services (ACCHS). ACCHS were established in the 1970s to provide culturally appropriate services for Aboriginal Australians. As well as focusing on preventing and treating disease, the services fostered community development and provided educational resources for health professionals (Anderson & Wakerman, 2005; Hunter et al., 2005).

TABLE 1 Categories of participants.

Category	Participants	Code	Total
Volunteer	Dentists	A	6
	Dental nursing assistant students	E	2
	Other stakeholders	C	5
Clients	Homeless adults	F	18
Service provider	Day Centre staff	B	2
	Oral health clinical reference group (OHCRG)	D	3
	Volunteer centre staff	G	1
	Executive management	H	2
Total			39

This paper presents findings from a model of oral healthcare using volunteer dentists at a community-based service, St Pat's that was established to meet the needs of adults experiencing homelessness in Fremantle, Western Australia. Fremantle is a port city within the Perth metropolitan area offering private dental services, one government dental clinic and public and private hospital emergency services.

St Pat's (https://stpats.com.au/) is a not-for-profit organisation catering to clients who are homeless, at risk of homelessness, have mental health issues or experience socioeconomic disadvantage. The Day Centre provides access to support services including housing, health, welfare and emergency relief, social activities, education and training. It also offers meals, facilities and specialist services. Service use averages 222 people/weekday and the most common presenting issues are financial difficulties, housing crises, unemployment, mental health and medical issues. Funding for the organisation is received via fundraising activities, donations and government and other non-government support.

Staff at St Pat's identified a need for dental care in their clients and 2016 established and developed a fully equipped, community-centred oral health clinic (OHC) funded externally with free clinical care provided by volunteer dental professionals. The OHC is integrated into the existing Day Centre providing a safe, familiar and secure space with flexible access to key services for those most in need. The objectives of this project were to examine whether providing free oral care using volunteer dental professionals and creating a responsive, respectful and trustworthy environment for clients who are homeless or at risk of homelessness is perceived to be effective in meeting their oral health needs (Charnock et al., 2004; Hede et al., 2019). The paper presents findings from a qualitative study investigating service providers and users' responses to setting up, delivering or receiving dental services at this community-based volunteer OHC.

2 | METHODS

A social constructivist approach was chosen as it aims to describe reality as constructed by individuals within a specific context. This approach positions the participant at the centre of the meaning-making process whose voice and interpretations are captured in their interactions with the researcher and are central to examining the topic of interest (Polit & Beck, 2010; Thomas et al., 2014).

Participatory action research guided data collection and analysis which included reflection and action to reduce health inequities and improve health outcomes by involving participants in the process (Baum et al., 2006). Three categories of participants were included: clients (adults experiencing homelessness or at those risk of homelessness) who accessed the dental clinic; service providers involved in the establishment, organisation and/or management of the clinic; and volunteer dental health professionals (Table 1).

Ethics approval to conduct the research was obtained from The University of Western Australia Human Research Ethics Committee (Approval number RA/4/20/4975).

2.1 | Data collection

Purposive sampling was used to recruit participants from each category via word of mouth, phone or email. Participants were then organised into eight discrete groups (Table 1) to engage in the project. Clients were informed about the project by staff at the Day Centre and researchers followed up those interested inviting them to participate.

Following informed consent, individual semi-structured interviews lasting 30–60 min were conducted and audio-recorded at the Day Centre from October 2018 to August 2019. Specific lines of inquiry guided the questions for dental health service providers including how the OHC was established, who was involved, the program's aims, and barriers and enablers to implementation. Other questions related to the OHC's impact on clients and other participants involved in management or service provision. Whilst questions varied between groups, all participants were asked about their perspective and experience of the clinic. Initially, each participant was questioned about the clinic's establishment, but it became clear that clients were not involved and questions for them focused more on the program's impact, enablers and barriers to accessing care, responses to care and oral health outcomes. Interview guides were developed for each group. For example, topics for management related to their experiences setting up the program, perceptions of its

impact and whether resources were adequate in terms of ongoing sustainability; for clients topics related to their experience attending the clinic; topics for dental professionals included their motivation to and experience of volunteering in this context. Interviews were transcribed verbatim, de-identified and imported into NVivo 12 (https://www.qsrinternational.com) to organise and manage data.

2.2 | Data analysis

Researchers used an inductive approach to analyse raw data specifically related to participants' perceptions and experiences from which themes were derived and classified under two pre-determined categories 'establishing the OHC' and 'responses to implementation of the clinic' (Azungah, 2018). Participants' responses were organised into specific groups mentioned earlier (Table 1) to assist in a comparative analysis of key themes emerging within and between groups. Two authors (A.D. and H.L.) independently conducted a line-by-line analysis of each interview within each group to identify key themes related to the establishment and impact of the clinic. There was some overlap between groups as several participants belonged to more than one group, e.g., oral health clinical reference group (OHCRG) members also volunteered as dentists. Themes were then compared within and between groups for similarities and differences, discussed and reviewed by all the authors until a consensus was reached.

3 | RESULTS

Thirty-nine semi-structured interviews were conducted across participant groups and responses were organised under the categories of 'establishing the OHC' and 'responses to implementation of the clinic' (Table 1). Key themes organised under 'establishing the OHC' included incremental steps related to funding, creating a welcoming and respectful environment, recruitment and governance and identifying strong principles to underpin patient-centred care. Key themes under the category 'responses to implementing the clinic' included increased client access to oral health services and follow-up care and positive responses from health providers volunteering at the OHC. Challenges included the OHC's sustainability with uncertainty around funding and recruiting volunteer dentists.

3.1 | Establishing the OHC for adults experiencing homelessness

3.1.1 | Background and aims

St Pat's was instrumental in establishing the OHC with the CEO and chairman of the board, as members of executive management, guiding the process from the beginning. The organisation obtained funding to submit a business case for an OHC for adults experiencing homelessness. Day Centre staff had previously conducted in-house surveys and interviews identifying clients' needs and non-dental health providers involved in other health clinics at the Centre. Findings indicated clients' high oral health needs often require urgent dental care.

The advisory board's aim in establishing the OHC was to make a meaningful difference in the lives of people who were disadvantaged and marginalised, a group often difficult to access and with complex needs, and to deliver equitable and respectful services. In planning the service, executive management and Day Centre staff emphasised the importance of creating an environment of trust, safety and advocacy to provide quality dental care to clients. Participants from the advisory board involved in designing and setting up the OHC identified a series of steps to build a solid foundation that included systems to appropriately resource services, all guided by a set of strong principles, namely trust, equity, safety and quality dental care (Figure 1). Building blocks included gaining funding for a full-time OHC coordinator, resources to operationalise the clinic and governance structures.

One health professional stated that the OHC provided a 'much needed service to a group that otherwise probably wouldn't seek dental services, other than in the emergency situation'. Responses of other OHCRG members and Day Centre staff were keen to 'dream big' and set up a fully functioning OHC. This was made possible by engaging with an extensive network of supporters across the dental supplies industry and other funding sectors including government, private, industry and philanthropic sectors who donated or subsidised resources to the OHC. These resources were then used to equip the dental clinic including a dental chair and new OPG (orthopantomogram machine, specialised scanner providing a panoramic view of the jaw and teeth), donated by the dental industry.

Day Centre staff, executive management and OHCRG members considered this high-quality equipment and rigorous maintenance of the clinic would assist in giving clients the best possible quality service and facilitate a rewarding experience for volunteer dentists. The Day Centre manager had oversight of ensuring compliance with implementing maintenance plans, managing warranties and servicing the equipment, under guidance from the OHCRG.

Members of the executive and Day Centre staff noted the generosity, passion and dedication of designers, donors and volunteers involved in the OHC's implementation.

3.1.2 | Creating a welcoming and respectful environment

Creating an environment of trust, safety and advocacy for clients underpinned the delivery of quality dental care. Advisory board participants and Day Centre staff acknowledged the challenges many clients faced complying with public or private services' fixed appointment systems. To offset this, the OHC offered flexible appointment systems including reminders, if possible via mobile phone. As many clients already accessed the Day Centre for other services including meals, social work and recreational activities, offering oral health services within that familiar and trusted setting facilitated access.

FIGURE 1 Principles and essential building blocks for establishing and implementing the oral health clinic.

3.1.3 | Governance structure

The governance structure of the OHC involves the executive, the OHCRG, management and administration and a community reference group that forms the committee. The committee's roles included reviewing data, procedures, risk management and responding to feedback. Quarterly meetings involve the CEO, clinical lead, Day Centre manager and clinic coordinator, and various other stakeholders from the government, the tertiary sector, the dental profession and the services industry. The OHCRG ensured clinical governance and quality of dental care are maintained in the clinic, meeting bi-annually to discuss clinical practice and other issues to ensure its smooth running.

Clients and volunteers were encouraged to provide feedback and formal complaints and grievance procedure were initiated to ensure transparency. For example, a complaint about a dentist would be recorded, appropriate documentation completed and sent through to management and, if necessary, to the Board for a response.

A strategy to facilitate good governance required employing an OHC coordinator.

> You need to have that key person in the mix that can be the liaison between everyone, because if you took a coordinator out of the mix and you were only dealing with volunteers, volunteer reception in the health clinic, volunteers coming in, volunteer people in, you don't get the connecting thread. (Day Centre Staff).

The OHC coordinator's role involved scheduling clinic days and client appointments, managing the database, maintaining client records and service agreements for volunteer dental professionals, managing procedures around recruiting volunteers including induction and delivering services, supervising volunteer receptionists, and, crucially, liaising between volunteer dentists and clients. Whilst dentists rarely missed their clinics, they were cancelled if dentists were unable to attend. Long-term funding for the coordinator role is currently not secured.

3.1.4 | Recruitment

A stakeholder involved in recruiting volunteer dentists noted that existing services within the community were not meeting the needs of people who were:

> ...homeless, disadvantaged economically and socially, ... A lot of them can't even afford subsidised treatment that they could receive at government dental clinics (Other stakeholder).

Dental professionals were recruited as volunteers via word of mouth, advertising in dental newsletters, promoting the OHC at conferences or in articles in dental industry newsletters and via peak bodies such as the Australian Dental Health Foundation, a leading recruiter

of dentists. The duration of individual volunteering at the OHC varied from several months to 2 years. A local training centre provides and supervises student dental assistants. Clients are recruited via word of mouth or cross-referrals from other clinics at the Day Centre.

3.1.5 | Challenges

Participants were concerned about time-limited funding and recruiting enough volunteer dentists to ensure the ongoing viability of the OHC. Whilst dental assistants provided services, some dentists found student nurse involvement and not having a regular dental nurse impacted their productivity. However, student nurses appreciated working with this client group.

> It did open my eyes a little to see how people live and how they are and what they do not have, what we have, and stuff like that. (Student Dental Nurse).

3.2 | Responses to the OHC

Participants from executive management and Day Centre staff felt the OHC has met its goals to deliver services adapted to the needs of clients experiencing or at risk of homelessness, rather than the more usual 'one size fits all' approach.

> The essential factor to my mind is that it is in that trusted environment (Executive Management).

Clinic data included treatment for dental caries, pain, gum disease and edentulism via the use of fillings, plaque removal, professional teeth cleaning, extractions including wisdom teeth, root canal treatment and provision of partial and complete dentures. Volunteer dentists indicated they chose functional treatments to ensure clients were pain-free.

> You want the filling and the work to last and not to cause pain, and there are time constraints and knowing that the patient may or may not be able to or want to come back again. So it is trying to kind of get as much done in the appointment to a high standard that you know is going to be functional. (Volunteer Dentist).

Whilst dentists often carried out more extractions than in private practice, clients were offered and fitted for dentures at little or no financial cost.

3.2.1 | Accessing the OHC

Most clients identified free dental care as a key factor in accessing the clinic. Some were in debt or could not afford dental care after they had paid essential expenses. Other health and social services located at the Day Centre facilitated referral pathways to the OHC for clients needing dental care. Clients appreciated being able to access the OHC at the Day Centre and complete treatment. Clients rated the clinic as very good to excellent on a scale of 1–10 with 10 being excellent. One client rated the clinic '7 or 8' the rest scored 8 or higher with 6 rating it at 10. Clients stated they had become more informed about oral health and, of the 18 interviewed, all had attended follow-up appointments.

> Because of all the plaque I also had gum disease because of it all, so they had to clean it all and now my gums are all good. Everything is all good, and I'm trying to keep all of that up. (Client).

Whilst free dental care was significant in the rating, other factors were also noted including the caring and welcoming atmosphere, professionalism and lack of judgement from staff. In some interviews, the judgmental attitude experienced at other dental services was contrasted with clients feeling respected and included in decisions about their treatment at the OHC.

> They ask what I would prefer. They ask, 'Is there anything wrong?' They check out the situation in all aspects … So it is good. It is a friendly interaction rather than, 'I am dominating you. You have got to do as I say. (Client).

Clients appreciated the flexible appointment system, relatively short waiting times, text reminders and phone calls and the stand-by system for appointments if there were cancellations, useful for those without mobile phones. Clients seemed to accept that those needing emergency dental care were prioritised. Morning reminder calls meant staff became aware of 'no-shows' early enough to offer appointments to other clients on 'stand-by' or who were waiting in the queue at the day centre ensuring maximum use of dentists' time. Several clients said they would come for check-ups rather than wait till they had a problem.

3.2.2 | Oral health outcomes

Most clients commented on the benefits they received from dental care that were transformative as well as practical such as being able to chew food:

> It will be awesome to be able to smile with some teeth, yeah. It is a big bonus. (Client).

> Since they took my teeth out I have put on weight. I have gotten healthier, yeah, because I could not eat with them wiggly like that because the infection would set in underneath the gums in between the teeth. (Client).

Others felt confident enough to apply for a job following treatment at the OHC.

> I wanted to go back to work because I'm a teacher's assistant and you cannot get a job when your teeth are all like that. No one wants to hire you in a primary school when you look like that, yeah. … I'll get another job hopefully, yes. (Client).

Improvements were often most dramatic following the application of dentures, either because the existing teeth were in poor condition or because the client was edentulous, some for many years.

An intention when setting up the clinic was to shift focus from managing clients' emergency dental needs to engaging them in ongoing restorative treatment, education and changed behaviour to prevent further problems seemed to be working.

> I've sort of been looking after my teeth, brushing, where before just once in a while or before you go to the doctor you would brush your teeth, but now I've been morning and night. (Client).

The transformative effect on clients of improving their oral health was noted by volunteer dentists:

> I have seen a vast majority of my patients go on to find stable housing and even gainful employment after having their teeth rehabilitated. Their own personal esteem and confidence is palpable as the treatment progresses and I would say the impact of our work can be life changing. (Volunteer Dental Professional).

> Just this guy, he said that he didn't have any job… he said that he was eagerly waiting for his dentures because he has an interview so that he can get a job, because it was his front tooth, like, front two teeth. When we gave him the denture he was like over the moon. (Volunteer Dental Professional).

Helping to improve oral health for those who were homeless also reaped rewards for those who volunteered at the OHC:

> They are absolutely so emotionally and overwhelmingly grateful. So, yeah, it is just a wonderful thing to be involved in. (Other Stakeholder).

> One of the ladies there [client experiencing homelessness] gave us like a thank you card for making her smile, you know. It was so good. (Other Stakeholder).

The opportunity to give back to their community and make a difference by improving the oral health of adults experiencing homelessness was a reward in itself with volunteers prepared to recommend the experience to others:

> The real positive message about the whole thing is that you can have such a more profound impact than we are used to seeing in normal day-to-day drill-and-fill dentistry. You can really change the course of people's lives when they feel like they've been invested into, in their appearance. (Volunteer Dental Professional).

3.2.3 | Ongoing challenges

Despite the huge demand for oral healthcare in this target population and the positive response to the dental clinic across groups, the sustainability of the OHC is not guaranteed. Ongoing funding for currently employed staff is not assured, and neither is any back-up if one staff member is either sick or on leave. When that happens, no dental clinics are booked in. Other challenges are structural and relate to the OHC's ability to meet Commonwealth Government and other funding model requirements for oral care in future.

At an organisational level, several groups considered employing a permanent dental assistant was necessary to ensure continuity of patient care, the efficient organisation and management of the dental clinic and the capacity to supervise dental assistant students. Whilst some participants suggested recruiting more volunteer dentists, space at the day centre is limited with no room currently for expansion. Some dentists would like greater throughput of clients but were constrained by various factors including clients who failed to attend appointments.

When asked whether a model of care that specifically meets the needs of this target population might relieve the government from the responsibility to provide dental services, one participant responded:

> I think there is a need for both … We'll try and gently encourage [clients] to go to the government dentist if we think that that is more appropriate for them. Certainly the need for dentistry is so huge that we couldn't say, 'Well, we are going to be the stand-alone'. … So I think there is a need for both, and it would be nice to see this kind of model maybe even being replicated [elsewhere]. (Day Centre staff).

4 | DISCUSSION

A major finding across all groups was the positive response to establishing and implementing the OHC in providing dental care to adults

experiencing homelessness. Our findings provide evidence that using volunteer dental professionals at a community-based OHC can fill a gap in care by meeting the needs of adults experiencing or at risk of homelessness who may be reluctant or unable to attend other dental services. Clients accessing this community-based clinic benefited from the treatment, information about prevention and follow-up care that in many cases transformed their lives. Clients commented on being treated respectfully and with care, reflecting some of the core principles underpinning the OHC including equity, trust, safety, flexibility and offering high-quality dental care, including providing dentures to those in need. However, uncertainty around future funding for the OHC and the ongoing recruitment of volunteer dentists were a concern.

However, evidence suggests that system-level barriers such as the cost of care for clients, and disincentives for dentists to work in this area due to poor remuneration rates, prohibit many adults experiencing homelessness from accessing public dental clinics. Instead, rather than seek comprehensive dental care (Coles & Freeman, 2016), many access hospital emergency departments for non-traumatic dental problems (Cohen et al., 1996; Figueiredo et al., 2016).

Given the numerous challenges facing adults experiencing homelessness, our findings support those from a systematic review on strategies to improve oral health in this population group, particularly around flexible appointment systems (Goode et al., 2018). Flexible appointment systems were found to be more effective in clients returning for follow-up care in a dedicated oral health service located in a multidisciplinary health centre rather than a mobile clinic (Simons, 2003). By responding to their immediate needs and being sensitive to the socioeconomic and psychosocial factors disrupting the lives of adults experiencing homelessness (Caton et al., 2016), our findings supported those of Van Hout and Hearne (2014) who identified that enablers to dental visits included knowing your dentist and having a dentist onsite in healthcare settings.

Our study supports other evidence that volunteer dental professionals working with disadvantaged social groups appreciate the opportunity to give back to the community (Wallace & MacEntee, 2013). Patel et al.'s (2015) research into dentists volunteering to work in remote Aboriginal communities also reflected this finding by providing dental services where previously they were non-existent. Whilst our findings indicate that the St Pat's OHC clearly meets a need, responses from management suggested the model was not sustainable with recruitment and funding issues an ongoing concern despite this population group often reluctant to access public dental services. This raises questions about the need for appropriate strategies at the level of policy and practice to increase dental workforce capacity and provide equitable services to a disadvantaged group with complex needs (Mouradian, 2006).

Whilst volunteer models can fill a gap that other services do not reach, at least in the interim, they also set a standard for services that are community centred, equitable and respectful. We suggest that our findings offer principles and key building blocks to creating a safe and trusted environment to increase access and deliver high-quality oral healthcare to adults experiencing or at risk of homelessness.

4.1 | Limitations

Whilst participation in this project was voluntary, we acknowledge that purposive sampling may not have captured patients or volunteers dissatisfied with the dental services offered by the clinic. We also acknowledge the risk of potential response bias of those attending the clinic or providing services for the clinic to support its aims. This risk was mitigated by having direct contact with participants, building rapport and trust, controlling the 'emotional tone' of questions and debriefing and discussing response bias with the research team (Bergen & Labonte, 2020; Fisher & Tellis, 1998). There may have been other limitations. For example, the clinic was located in a successful day centre but the dynamics of the overall centre were not explored in detail. In terms of analysis—having pre-determined questions may be a limitation but we did find it helpful for this context.

4.2 | Conclusion

The sustainability of volunteer models of dental care is not assured given the unpredictability of funding to secure key service providers and uncertainty around the ongoing recruitment of volunteers. However, our evidence suggests that creating an environment of respect, trust and safety for clients who are homeless or at risk of homelessness is an important step in increasing the likelihood they will access oral healthcare, return for follow-up treatment, factors that can subsequently lead to an improved sense of health and well-being.

AUTHOR CONTRIBUTIONS

All authors conceived the study contributed to the proposal, discussed the analysis, and contributed to the paper; Angela Durey led the analysis and drafted the first version of the paper.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the participants and the support of St Pat's staff in designing and undertaking this research, particularly the assistance and advice of Traci Cascioli and Debbie McLeod. We also acknowledge funding from St Patrick's Community Support Centre and the Sisters of St John of God. Open access publishing facilitated by The University of Western Australia, as part of the Wiley - The University of Western Australia agreement via the Council of Australian University Librarians.

CONFLICT OF INTEREST

The authors have no conflict of interest.

FUNDING INFORMATION

Joint funding from St Patrick's Community Support Centre and the Sisters of St John of God.

DATA AVAILABILITY STATEMENT

Research data are not shared (for ethical reasons).

ETHICS APPROVAL

Ethics approval to conduct the research was obtained from The University of Western Australia Human Research Ethics Committee (Approval number RA/4/20/4975).

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How to cite this article: Durey, A., Lette, H., Saunders, J., & Slack-Smith, L. (2022). Community-centred oral healthcare for adults experiencing homelessness in Australia: Perceptions and experiences of key stakeholders. *Health & Social Care in the Community*, *00*, 1–10. https://doi.org/10.1111/hsc.14070

International Journal of
Mental Health Nursing

International Journal of Mental Health Nursing (2018) 27, 178–186 doi: 10.1111/inm.12307

ORIGINAL ARTICLE

Enhancing oral health for better mental health: Exploring the views of mental health professionals

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ABSTRACT: *The association between oral health, self esteem and quality of life is well established yet there is limited research on the impact of addressing the poor oral health of people living with mental health disorders. Greater consideration is warranted on how enhancing oral health in the course of mental healthcare might reduce the burden of a person's ill health. The role of mental health professionals is important in this regard yet uncertainty persists about the role these providers can and should play in promoting oral health care for people with mental health disorders. This qualitative study explored the issue of oral health and mental health with community based mental health professionals in Perth, Western Australia. It examined their views on the oral health status and experiences of their clients, and the different and alternative ways to improve access to care, knowledge and preventative regimens. Findings indicated participants' ambivalence, reluctance and lack of training in raising oral health issues, despite its acknowledged importance, indicating a siloed approach to care. Findings offer an opportunity to reflect on whether a more integrated approach to oral health care for people with mental health disorders would improve health outcomes.*

KEY WORDS: *holistic mental health care, inter professional care models, mental health, oral health.*

INTRODUCTION

There is a well accepted association between oral health and self esteem, self confidence and quality of life (Jokovic *et al.* 2002; Locker 2009; Locker & Allen 2007; Strauss & Hunt 1993). This suggests the critical importance of addressing the poor oral health status of people living with mental illness as a means of potentially improving their sense of wellbeing and mental and physical health (Kisely 2016). Yet there is limited research examining the correlation between oral health related quality of life and people with a mental illness. Greater consideration is warranted as to how enhancing oral health in the course of mental healthcare might reduce the burden of a person's ill health (Persson *et al.* 2009). The role of mental health professionals is important in this regard, yet limited research is available that examines how providers can assist with and promote oral health care for people with mental health disorders (Gurbuz *et al.* 2010; McCreadie *et al.* 2004; McKibbin *et al.* 2015). This study explored the issue of oral health with mental health professionals including nurses working in the Perth metropolitan area, Western Australia and the different ways in which access to care, knowledge and preventative regimens might be enhanced for adults with mental health disorders. It also examined the views mental health professionals held with regard to

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Disclosure statement: There are no conflicts of interest associated with this research or paper. The authors acknowledge the funding for this project by the Office of Mental Health, Department of Health Western Australia
Authorship statement: In keeping with the latest guidelines of the International Committee of Medical Journal Editors. CS contributed to the data collection, analysis and interpretation, drafted the initial paper, provided intellectual content and revised subsequent drafts to final submission. AD contributed to the conception and design of the research, undertook data analysis and interpretation of data, revised drafts of the manuscript for intellectual content; LSS devised the original project, contributed to the concept and design of the study, assisted with data analysis and critically reviewed drafts for intellectual content. All authors read and approved the final manuscript, and are all in agreement with the manuscript. The authors listed all meet the authorship criteria according to the latest guidelines of the International Committee of Medical Journal Editors.
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Accepted November 08 2016.

their role or responsibility in supporting their clients' oral health care.

BACKGROUND

In Australia, as in many countries, people living with a mental illness tend to have suboptimal oral health (Jones *et al.* 2013; McCreadie *et al.* 2004). Despite a high level of need, especially among hospitalized patients (Bertaud Gounot *et al.* 2013; Matevosyan 2010; Patel & Gamboa 2012) dental services are often underutilized, particularly by those with depression and anxiety (Angelillo *et al.* 1995; Heaton *et al.* 2013; Okoro *et al.* 2012; Ponizovsky *et al.* 2009). Evidence suggests various reasons for this including stigma, feelings of shame, helplessness and low self esteem, lack of income and health insurance (Matevosyan 2010; Person *et al.* 2010; Robson & Gray 2007); dental fear (Heaton *et al.* 2013; Lenk *et al.* 2013) and restlessness and anxiety in the dental waiting environment (Happell *et al.* 2012; O'Day *et al.* 2005). These issues are exacerbated by the dental health system in Australia operating largely in isolation from the mainstream health system (Crocombe *et al.* 2014). This has resulted in limited linkages between oral health, general health and mental health care and a system that largely is unable to accommodate the needs and concerns of disadvantaged groups including those with poor mental health.

This paper presents the perspectives and experiences of a group of mental health professionals on addressing the oral health of people living with a mental illness. This included issues impacting on clients' oral health; the role of mental health professionals in providing oral health information and support; and identifying potential enablers to enhancing the oral health care of people with mental health disorders.

METHODS

Design

This qualitative study used interviews to explore participants' experiences and perspectives of oral health – a method considered especially appropriate to this phenomenological based inquiry (Tong *et al.* 2007). Findings presented here represent interviews with mental health professionals in community and academic settings (excluding medical staff) and involved researchers contacting known and referred contacts via email and telephone to seek their participation in the project. This purposive recruitment focused on those working in a mental health setting, many of whom also suggested referrals for other potential participants including those working in tertiary education.

Data collection

One psychologist, four social workers from community based outreach mental health services and three mental health nurses – two of whom are currently teaching at a tertiary level and one in an outreach community based service – and an occupational therapist working in outreach and home based skills support with mental health clients agreed to participate and, following informed consent, nine semi structured interviews were digitally recorded and subsequently transcribed (Table 1). Participants had experience working in both hospital and community based services in metropolitan and regional settings. Seven interviews were conducted face to face and two via telephone. Interviews lasted up to 60 min and took place at a location and time convenient to both participant and researcher. Interviews were completed over a 5 month period in 2015.

Discussion prompts were developed to guide interviews and illuminate important issues identified by the participants. Interviews were conducted until similar themes in participants' responses were recurring. Interviews ceased once data saturation was reached and no new information was emerging about the topic.

Analysis

Transcriptions were read and coded independently by three researchers for recurring themes. Findings were then compared, discussed, reviewed and revised for similarities and differences and any recurring patterns or anomalies to ensure rigour and reliability of the analysis through triangulation. Findings were further

TABLE 1: *Description of participants*

Interview	Profession	Code
1	Social Worker	SW 1
2	Social Worker	SW 2
3	Social Worker	SW 3
4	Social Worker	SW 4
5	Mental Health Nurse	MHN 1
6	Mental Health Nurse	MHN 2
7	Mental Health Nurse	MHN 3
8	Psychologist	P 1
9	Occupational Therapist	OT 1

assessed in light of existing evidence for whether they supported, extended or challenged existing evidence in the literature. The interviews conducted were rich in content.

Human research ethics approval

We obtained institutional and health department ethics approval for this project. Ethics and governance requirements provided strict criteria for recruitment of participants in government settings hence findings pre sented here represent community and academic settings.

RESULTS

Key findings from the interviews identified attitudes and behaviours relating to poor oral health among peo ple with mental health disorders including an unhealthy diet, a lack of health literacy around the impact of certain foods, drinks and medications on the mouth, a history of prolonged substance use particu larly methamphetamine, and a high prevalence of smoking, infrequent tooth brushing often associated with less than optimum self care and a high level of untreated oral disease. Participants suggested that cli ents with mental health disorders often self medicated including with analgesics such as ibuprofen or non steroidal anti inflammatory drugs. While emergency services were accessed when in extreme pain, there was limited priority accorded oral health and high levels of anxiety about attending dental services. Find ings also confirmed other evidence of barriers people face such as the costs of dental services both private and public, and a general reliance on a public dental system that is characterized by long waiting lists requir ing advance planning. While acknowledging how important oral health was to a sense of wellbeing, par ticipants described the structural barriers their clients face in addressing the oral health concerns including a lack of resources and services, and the perceived limi tations of their role as a mental health professional. Participants also suggested how some of these issues might be addressed. The following explores these key findings in more detail.

Low prioritization of oral health

All participants acknowledged that that while the state of their clients' teeth was concerning, it was often a seen as a 'marker' of poor self care and overall health exacerbated by their mental health condition. They considered that poor oral health reflected the long term nature of their client's mental health disorder.

Nonetheless, while clients experienced severe prob lems with their teeth they generally did not prioritize their oral health.

> I think dental is something that comes up a lot, but I think sometimes in the kind of pecking order of where things are, even though it's very important, it can often slip down because there are all these other sort of stresses and life crises going on that sort of need to be dealt with first. [SW, 1]

Participants described how clients may be aware of their poor oral health yet either perceived it as irrele vant to their lives unless they were in pain, or felt pow erless to do anything about it. A lack of self care was considered a contributing factor to a cycle of reduced motivation combined with other causal issues that can compound the problem. Over time this often results in significant problems for people living with mental health disorders requiring immediate and even urgent treatment.

> I think that poor oral health is actually a symptom of their mental illness in the very beginning, and then I think it becomes a chronic condition. And after that it is due to part of their symptoms, so the fact that they have poor self care, and poor oral health just reflects that poor self care. And also they don't put importance on it because other things are becoming important and they are not that well educated around the whole of body approach to mental health. [MHN, 1]

One participant commented that colleagues in the hospital emergency department had begun to associate chronic oral pain with increased psychosis.

The impact on the mouth of certain medications prescribed to those with a mental illness were also noted as detrimental to oral health and often con tributed to the decline of an already poor oral health status. Participants described how some medications cause a lack of saliva while others caused extreme car bohydrate cravings – both of which can lead to caries and worse physical health. Participants noted that cli ents rarely knew about these side effects and they doubted these issues were raised when such medica tion was prescribed. Some thought this should be raised by those prescribing or dispensing to ensure cli ents were informed and encouraged to look after their mouth. Several saw the absence of these conversations

by health professionals as indicative of a siloed approach to people's care among health professionals, particularly in oral health.

> I think the mistake that happens is that somebody goes to their psychiatrist and they get given medication for their mental health, but then their physical health is separate, a completely separate GP, and then their dental care again is completely separate, and diet is completely separate. [SW, 1]

Recognition of importance of oral health to mental health

Many participants spoke of clients whose poor oral health negatively impacted on their sense of wellbeing that was offset by an immediate and often dramatic impact once oral health issues had been addressed.

> When people do actually get oral health managed and seen the difference that it makes is phenomenal. Like, it is just, you know, you are going from somewhere behind this curtain and there is all this horrible stuff and then you get it done and the curtain is opened up and you go, 'Okay'. People are smiling. They look at themselves in the mirror more and then they take more pride in themselves and then they think of their opportunities. [SW, 1]

One participant described a client who was 24 with no teeth, all had been extracted but the client was unable to afford dentures and had learnt to manage without. The mental health professional described numerous difficulties this posed, including communi cating and how self conscious and withdrawn the young woman became. Eventually the client was able to access dentures through a Commonwealth funding scheme and the transformation was remarkable:

> She was like a different person. She's actually gone and got work and her kids go to a private school where she volunteers and they pay for the fees and she won a schol arship for them. She's had that confidence. [SW, 1]

While recognizing the impact on people's wellbeing, there were mixed reactions among participants about the direct relevance to their work of discussing oral health with their clients.

> It would need to be identified in our work as a focus of work to really explore it to that level, because there are a lot of health messages that you can put out about all kinds of things with somebody's diet, but if you are kind of trying to build a good rapport and you are just bombarding people with 'And this! And this! And this!' but actually what you are trying to do is develop hope and develop optimism and build skills for sort of self efficacy and so on, then you've got to prioritise, you know, where the focus is at now. [SW, 2]

Participants suggested that for some professionals there is already enough to do with their clients and it is not necessarily their responsibility and could even be seen as intrusive or patronizing.

> I do think it is a sensitive issue and it is not some thing you would bring up straight away, and I guess that is just being respectful. And because the service is client driven, the client who doesn't have her teeth and I talk to her about 'Look, what's the prior ity? What do you want to focus on first?' and even though she is missing teeth, if she had said, 'Accom modation and moving is more important' that's fine. [SW, 1]

Participants described a lack of resources in the mental health system with personnel expected to work with larger caseloads and under enormous constraints. They described the emphasis placed on the patient's safety and mitigation of risk as paramount and was prioritized over other health issues. There was also a belief that colleagues lacked understanding of the importance of addressing oral health with their clients.

> I don't think that we have clicked, nurses and health professionals have clicked, that if your mouth is healthy the rest of you is healthy. So it is part of the risk assessment process, but in mental health we are so focused on safety, the keeping the person safe, and people that work in mental health settings are extre mely pressured for time and for, you know, resources and they are just worried about keeping people safe. [MHN, 3]

Need for professional supports

Participants identified the importance of strengthening the capacity of mental health professionals by ensuring they have a greater understanding of oral health and quality of life, and providing strategies for integrating oral health care into their work. Ideas proposed included providing oral health information in relevant staff newsletters, informal training to staff, and incorpo rating oral health in relevant undergraduate training. They also spoke of the need for mental health profes sionals to reflect on their own practices in terms of

how they approach these issues with clients, precipi tated by this research:

> I guess I'm just wondering if there are times when I could share more stuff, you know . . .and there proba bly would be ways that you could build it into just your natural sort of chat about stuff, which I could a bit more. [SW, 2]

> I think any kind of information would be good. And, you know, even just after having this conversation I could bring it up with my clients who I have a good rapport with. [SW, 3]

While participants acknowledged the need for health professionals to prioritize the oral health and care of people with poor mental health they also felt that with out accessible dental health services it was very difficult or even pointless to support their needs.

Alternative service models

Most participants spoke of the lack of trust those living with a mental illness have with health care providers in general, as well as a heightened sense of fear and anxi ety about a clinical setting and the dental chair. All participants acknowledged the importance of an appro priate and empathic approach from dental health pro fessionals and dental health services staff.

> . . .to understand the level of trauma and background stress that some people walk in with, which means that if somebody speaks sharply to them in a context where they have already got some anxiety either about the dentist or they have overcome some anxiety to get out of the house at all, it doesn't really take very much because people don't have a lot of capacity left at that point to just keep on absorbing or just 'water off a duck's back' if somebody behind reception is having a bad day or can't be bothered. And so that sense of, you know, care and nurture needs to begin as you walk in the door. [SW, 2]

> Treating people with respect and treating them as if they are interested in knowing what's going to happen to them is a really good beginning. I think that some times professionals tend to forget those preliminary steps. [MHN, 2]

A recurring theme was the need for flexible, less formal, service arrangements that could accommodate some of the concerns and barriers experienced by peo ple with mental health disorders. Participants described the rigidity of the public system where missed appoint ments meant another long delay.

> People's lives can be so chaotic and their thought pro cesses are so disorganised that things can get lost, and then sometimes people then, because they missed that appointment, it is like, 'Well, then you go to the bot tom of the list' or whatever. So I think in some ways that expectation of people with chaotic lives to fit into that stream isn't always a good mix. So whether it is you go and you have bulk appointments and you get a lot done in a very short space of time, and then that's done, sort of thing, might help. [SW, 1]

Some suggested a 'drop in' service where people knew in advance that they would have to wait but would be more inclined to do so because if it meant they could access services when they needed, would be more suited to many people's situations.

> I think sometimes that that not having to plan but just to be able to, when you have the money in your hand and the impulse is there, to know that every Wednes day you can go to this place and it's a possibility. I don't know. Maybe that is one way. [MHN, 2]

Provision of dental hygienist services and oral health promotion information sessions within mental health services facilities, and the use of peer support workers to accompany people to dental services were also suggested.

DISCUSSION

An acknowledged ambivalence among mental health professionals was seen by participants as associated with uncertainty about the limitations of their own role and a fear of intruding on clients' privacy. This raises questions about who is responsible for oral health care for people with mental health disorders particularly as their oral health is often worse than that of the general population (Azodo *et al.* 2012; Ponizovsky *et al.* 2009; Purandare *et al.* 2010). Kisely *et al.*'s (2015) systematic review offered evidence from a meta analysis that found people diagnosed with mental health disorders in Australia had a higher rate of decayed, filled and missing teeth than the general population. The partici pants in our study recognized that their own profes sions did not prioritize oral health and were reluctant to, and inexperienced in raising oral health issues. Such findings suggest the need for inter professional conver sations about how to effectively address this issue. The particular oral health issues, attitudes and behaviour among the clients of mental health professionals con sulted for this study are supported by other research about the oral health experiences and barriers faced by

people with mental health disorders both in Australia and elsewhere (Arnaiz *et al.* 2011; Gurbuz *et al.* 2010; Happell *et al.* 2012). Our findings suggest that participants' recognition of the importance of assisting their clients with oral health issues was offset by structural issues where a siloed approach to care in the current health system did little to support health professionals in this regard. Instead, this approach and lack of interprofessional engagement on the overall health care of the patient ran the risk of compromising rather than improving oral as well as mental and physical health outcomes.

Currently in Australia, as elsewhere such as the US, dental care and oral health services are provided in a system that is treatment focused operating largely in isolation from the mainstream health and mental health system (Mouradian & Corbin 2003). A lack of interprofessional integration between dental services and general medical and mental health services is often exacerbated by an absence of clarity about roles and responsibilities, poor or inconsistent communication and heavy reliance on the professional relationship between two individuals rather than between services (Gurbuz *et al.* 2010; Happell *et al.* 2012; Robson & Gray 2007; Wieland *et al.* 2010).

Evidence also suggests inadequate understanding and limited specialized expertise among dental professionals to work and communicate effectively with patients with a mental illness (Berry & Davidson 2006; Happell *et al.* 2012; McKibbin *et al.* 2015; O'Day *et al.* 2005). This includes a reluctance to talk to patients about the relationship between mental health and oral health (Berry & Davidson 2006; McKibbin *et al.* 2015). Few dentists appear adequately prepared in providing care to patients living with mental illness (Friedlander & Marder 2002; Griffiths *et al.* 2000; McCreadie *et al.* 2004; Vainio *et al.* 2011).

This raises questions about the limitations of the current health system in adequately meeting the complex health needs of adults with mental health disorders. If policies and practices (including education and training) remain unchanged, oral health outcomes in this disadvantaged group are unlikely to improve. Limitations inherent to both private and public dental health systems also impact, albeit in differing ways, on the capacity of oral health professionals to be flexible enough to respond to the often challenging lived experience of those with mental health disorders and provide the type of care needed. Ultimately this means an absence of a patient centred care approach which is itself considered a key aspect to a number of positive outcomes including increased patient satisfaction, quality of life and a key aspect of quality in health care (Mills *et al.* 2013).

The Western Australian Mental Health, Alcohol and Other Drug Services Plan 2015–2025 includes in its guiding principles a requirement for services that are able to meet the needs of people with co occurring problems including physical health problems, and for improved system navigation, collaboration and integration to ensure that each individual receives the appropriate level of care and support to meet their needs. This is particularly pertinent given evidence that adults in the US with serious mental illness die 25 years earlier than the general population, the majority from cardiovascular disease (Viron & Stern 2010). A recent Malaysian study found that adults with schizophrenia had high rates of heart disease as well as dental caries and periodontal disease. The authors concluded that dental disease deserves the same attention as other comorbidities for people with schizophrenia (Wey *et al.* 2016). These findings suggest that oral health needs to be part of optimising physical health care for patients with chronic mental illness. The question is how to ensure this occurs given the current siloed nature of oral health care despite its relation to other comorbidities. The Stokes review on mental health services in Western Australia (2014) recognised that inter sectoral and inter professional engagement is an integral element to improving care and health outcomes (Stokes 2014).

Our findings highlight that more comprehensive oral health care for people with mental health disorders requires closer collaboration and coordination between all professionals. A multidisciplinary team approach might facilitate not only better inter professional communication but also improved coordination and integration of care. Kisely's (2016) provocative title to his paper 'No mental health without oral health' highlights the interconnections between oral health and mental health where, for example, perceptions of dental pain are exacerbated with depression and anxiety. Ideally, a multidisciplinary and partnership approach to supporting the needs of people with mental health disorders would also mean including dental professionals in their care and extending the responsibility for oral health care especially the prevention of disease, to other professionals (Moore *et al.* 2015; Wieland *et al.* 2010). Adopting an inter professional approach to oral health could assist oral health professionals to have greater insights about a patient's mental health status, while enhancing the role mental health professionals can play

in assisting with and promoting oral health care for people with poor mental health. A key area for this to occur is prescribed medication where evidence sug gests 40% of adults taking medication for mental health disorders experience oral health side effects where their mouths are either drier or more watery than usual (Morgan *et al.* 2011). While inter professional and inte grated oral health/mental health care is an option to improve outcomes, evidence on how to implement and resource this is lacking.

This study raises a much larger question of who is responsible for improving the oral health of disadvan taged groups including those living with mental illness. The current shortcomings in Australia's dental system and the barriers many disadvantaged people face in accessing oral health care means they are inadequately served and oral health care is perceived as largely out of their reach. Limited studies are available on the per spectives on oral health of adults with mental health disorders. However, one potential strategy to reduce disparities and improve the oral health care of people with poor mental health is to support mental health professionals to incorporate oral health in a more holis tic, coordinated and integrated approach to care. Yet a lack of available or accessible oral health services that can accommodate their clients poses a real hindrance for motivating mental health professionals to raise these issues. As the participants noted, even if they felt com fortable or able to address oral health issues with their clients and encourage them to prioritize their teeth – they currently have very few options they can offer to support people in realizing those goals. Their sugges tions for different dental service models with enhanced flexibility, peer support workers and in appropriate locations require serious consideration and have been shown to work elsewhere (Burchell *et al.* 2006; Mun *et al.* 2014). Other enablers to consider include actively fostering partnerships with dental professionals, and better utilization of the roles of nurses working in men tal health settings due to every day opportunities to discuss dental and oral health with patients and enhance advocacy, referral and provision of direct care (Almomani *et al.* 2009; Azodo *et al.* 2012; Edward *et al.* 2012; Kisely *et al.* 2011).

LIMITATIONS

While it is very important to understand perspectives of community based mental health professionals, fur ther work is required on perspectives of hospital based and medical staff. We also suggest that our findings, while context specific, might be applicable to other community based contexts across jurisdictions in Australia.

CONCLUSION

Our findings suggest that addressing the oral health needs of people with mental health disorders requires a dedicated review of current oral health policies and practices for whether they promote or constrain improvements to oral health outcomes in this popula tion group. The findings offer an opportunity to reflect on a more integrated approach to oral health care for people with mental health disorders, one that recog nizes not just the complex health issues they face as part of their lived experience, but also the resources needed to support inter disciplinary health profession als to collaborate and offer appropriate oral and mental health care in this context that improves overall health outcomes.

RELEVANCE FOR CLINICAL PRACTICE

The impact of good oral health on quality of life and wellbeing suggests discussion of basic preventive oral health care by mental health providers with their cli ents is critical. More resources and training are needed to encourage these health professionals to see the rele vance of this approach to their work and how best to integrate it in their practice in the face of competing demands. While mental health professionals promoting oral health is an important first step, resources to facili tate access to appropriate, affordable and timely dental care for people with mental health disorders is also required.

ACKNOWLEDGMENTS

We are grateful to the Office of Mental Health, Department of Health, Western Australia for funding this study. We also extend our thanks to Anne Read and Helen Lette for their critical review of the manu script and to all participants who gave their time so willingly to contribute to the project.

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Received: 7 April 2018 | Revised: 15 August 2018 | Accepted: 14 September 2018

DOI: 10.1111/cdoe.12427

ORIGINAL ARTICLE

WILEY Community Dentistry and Oral Epidemiology

Providing oral care for adults with mental health disorders: Dental professionals' perceptions and experiences in Perth, Western Australia

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Abstract

Objective: To explore dental professionals' perceptions and experiences of providing oral health care for adults with mild to moderate mental health disorders (MHD) in Perth, Western Australia.

Methods: A grounded theory approach guided this research which comprised semi structured interviews with oral health professionals working in private and/or public dental facilities attended by adults with MHD. An iterative analysis of transcripts identified emerging issues that were organized into categories under which key themes were noted, coded, compared, discussed, reviewed and revised independently by two researchers to ensure rigour.

Results: Sixteen interviews were conducted with six general dentists, three dental specialists, four oral health therapists (OHT) and three dental assistants. Barriers to providing oral health care for adults with MHD included limitations of the current model of care, often focused on treating advanced disease; limited inter professional collaboration; an over burdened public dental system and the financial constraints of private practice. Personal barriers included perceptions that people with MHD had limited capacity for self care and preventing oral disease. Factors that would enable oral health care included training and professional development for dental professionals to work effectively with people with MHD and a more flexible, inter professional approach that involved prevention and inviting family to consultations about oral health in primary health care settings.

Conclusions: Our study reveals structural barriers where services often appear to be inadequately prepared to meet the oral health needs of people with MHD. This suggests the need for strategies to review current models of care and encourage and support dental professionals to provide oral health care that is inclusive, inter professional, focused on prevention and sensitive to the social context and lived experience of people with MHD.

KEYWORDS
inequities, mental health, oral health, perceptions, qualitative

1 | INTRODUCTION

Despite increased needs, people with mental health disorders (MHD) have poorer oral health outcomes and are less likely to receive dental care than those without these disorders.[1-3] Evidence suggests that individuals in Australia with severe MHD are more likely to be edentate or have decayed, missing and filled teeth or surfaces than the general population.[2,4,5] Local and international evidence indicates

that factors influencing the sub optimum oral health status of people with MHD include poor general health, effects of medication and limited access to preventive dentistry.[6-9] Regular dental care in this group is recommended.[6] Yet, access to and affordability of dental care in Australia have been identified as a significant problem for people with MHD.[5,9]

States and territories provide most of the public dental services in Australia, and other services are largely private. Public services are available to those on a concession card (such as age pension, disability support pension or unemployment payments) although a co payment may be incurred for treatment.[10] Some of the concession cards are means tested. Private dental services are available to anyone who can meet the cost of care or has private health insurance. It is reported that 84% of dental visits in Australia are to private providers, and over 85% of employed dentists in Australia work primarily in the private sector.[10] Private and public domiciliary services are available (http://www.dental.wa.gov.au/adult/general.php). The dental speciality "Special Needs" is recognized in Australia, but there was no training nor registered specialists in Western Australia at the time of writing (Australian Health Practitioner Regulation Agency). The costs of accessing dental care can be prohibitive for socially disadvantaged adults reliant on public dental care, often incurs a fee, which is usually uncertain until treatment needs are ascertained. The public dental system serves a large number of patients with a high burden of disease and is characterized by long waiting lists, a limited range of services, a high number of emergency services and extractions of teeth, and little opportunity in the current structures to focus on prevention.[11]

Studies have shown that inter professional collaboration and attention to oral health in adults with MHD may improve their quality of life and oral health outcomes.[12,13] Developing accessible and appropriate dental services is an important step to addressing the oral health needs of people with MHD including anxiety, depression and severe mental illness. Critical to achieving that goal is understanding challenges dental professionals face in providing oral health care to such patients. Given the limited published research examining this issue, the aim of our study was to investigate dental professionals' perspectives and experiences of caring for people with mild (a person has a small number of symptoms that have limited effect on their daily life) to moderate (person has more symptoms that can make their daily life much more difficult) MHD.[14] This paper presents findings from interviews with dental professionals.

2 | METHODS

Given few previous investigations and the need to explore the perspectives of dental professionals who had cared for people with MHD, this qualitative research study adopted an inductive approach guided by grounded theory to identify key emerging themes.[15,16] Ethics approval was obtained from the Human Research Ethics Committee at the University of Western Australia.

2.1 | Data collection

Consistent with grounded theory, we used purposive sampling to engage a range of dental professionals including dentists, oral health therapists (OHT), dental specialists and dental assistants (DA) whose roles and perspectives could contribute to enriching our understanding of the issue.[15,16] Potential participants from public and private dental services were invited by the researchers via email, telephone or personal contact to participate in the project. Open ended questions guided the semi structured interviews and explored participants' responses to the barriers and enablers to delivering dental care to patients with MHD. Topics included problems encountered in the consultation, context delivering dental care and any concerns or challenges at the structural and organizational level including resources to support care, for example professional development and inter professional practice such as liaising with mental health professionals. Discussion prompts were used if further information was needed. Participants were invited to provide consent, and brief demographic information after a written and verbal explanation of the study was provided.

Interviews lasted up to 60 minutes and took place at a mutually convenient location over 2015 2016.

2.2 | Data analysis

The interviews were digitally recorded, transcribed and imported into NVivo (http://www.qsrinternational.com/) to assist with managing the information. Quotes are identified by professional group to avoid identification. Transcripts were read and open coded independently by two researchers, organized into categories relating to key issues and then more selectively coded for key themes emerging from the data.[15-17] These findings were then compared, discussed, reviewed and revised for agreement on the key themes and to ensure rigour and trustworthiness of the analysis through triangulation.[18] Analysis of participants' responses also identified a number of similarities and differences with data saturation reached when no new themes emerged.[19] Findings were interrogated in the light of existing evidence for whether they supported, extended or challenged current understandings in this field.

3 | RESULTS

Sixteen semi structured interviews were conducted with six dentists (of whom four were female), three specialist male dentists, four OHTs and three DAs. Participants' experience working in dental practice ranged from nine to 30+ years, and ages from 32 to over 70 years.

Key themes emerging from analysing participants' responses were organized under categories of "barriers" and "enablers" to providing oral care health care to people with MHD. Similar themes emerged both within and across professional groups. Key structural barriers to providing oral health care included limitations in the

prevailing siloed, one size fits all model of care often aimed at late stage treatment rather than a more flexible, inter professional approach to oral health in primary health care with more focus on prevention, an over burdened public dental system and the financial constraints of private practice. Personal barriers included perceptions that self care and preventing oral disease were limited in people with MHD. Enablers to oral health included training and professional development for dental professionals to work effectively with people with MHD, and encouraging inter professional approaches to care that also included family or professional carers in the consultations when appropriate.

3.1 | Barriers

3.1.1 | Siloed attitude to oral health

In Australia, dental services have historically operated largely in isolation from the mainstream health system.[20] Many participants noted variation among health professionals including medical general practitioners (GP), pharmacists and nursing staff, in understanding the importance of oral health as well as a reluctance to view it as their responsibility. People with varying MHD often have ongoing relationships with other health professionals, including a GP and mental health professional, yet there seemed to be little engagement at the level of care between dental and other health professionals.

Dental professionals in this study noted other health professionals' limited involvement in managing oral health care, educating people with MHD about oral health or referral for dental care. Health professionals' gaps in knowledge and perceived reluctance to discuss oral health, including risk factors and the prevention of disease, with adults with MHD were considered a significant barrier to improving oral health.

3.1.2 | Limitations of the public dental care system

Many dental professionals had provided oral health care to patients with a range of MHD through the public dental service. They identified that the public system was often a barrier to these patients maintaining their oral health care and was limited in the type of care provided, often focusing on treating advanced disease. Participants acknowledged that waiting lists and delays meant the system did not facilitate regular check ups to prevent oral disease nor provide adequate time to undertake preventative care for such patients; rather, they were just being "patched up." One dental assistant described the system as directed towards "the relief of pain," anything beyond that was viewed as "a luxury."

When considering the public system's capacity to accommodate the particular needs of people with MHD, one dentist described it as "intransigent," an OHT acknowledged the endless "bureaucratic hoops" patients have to jump through and another dentist noted the limitations of the system in accommodating those with MHD.

> Once you've been through it once, you will be recalled and all that sort of thing, but often the people with mental health issues are not really good at keeping track of it and coming back at the right time and so on, and so then sometimes they will be off the list and then they have got to go through getting on the waiting list again. [Dentist]

Participants were concerned that the public system was not designed to address problems people may have with literacy, accessing transport and providing permanent contact details. The need for patients to continually prove their eligibility by repeatedly completing numerous forms was cited as an example of how the system was not aligned with a principal user group with high oral health needs. One OHT was not surprised that people "find it overwhelming and just give up."

> The people that are eligible for treatment are usually people with mental health issues. They are not working. Their literacy educational levels tend to be poor, or you've got people where English is not their first language, and then you'll give them these forms that are just mind blowing. But you not only do that, you give them the forms for eligibility and then the following year you give them the forms again…. So, you've got the most vulnerable people in society and you've got a system in here that is just, like, for a literate person or a person that doesn't have all these issues. [OHT]

3.1.3 | Financial constraints of private practice

Participants' perceptions of the private dental system suggest it does not easily accommodate patients with MHD. Private dental practices were seen as essentially small businesses where a business model focusing on profit often governed dental service provision. Participants acknowledged the constraints and disincentives of private practice to address the needs of patients who often required longer consultations resulting from their MHD.

> Your productivity per hour in terms of remuneration is going to be significantly higher than trying to treat a patient who is very nervous, who has many issues both health wise and orally, and you don't know where to start. So that patient may need a lot more counselling, a lot more time in your chair, for you to earn their trust. [Dentist]

Participants acknowledged the importance of taking time to build rapport with such patients and noted that they responded well to proceeding slowly. Yet, the time this took was not remunerated, caused delays to appointment schedules and did not suit many

dentists who considered that they needed to work very efficiently and "get things done really fast."

> Everything has to be slowed down to an acceptable level. So you spend a lot of time that you don't get paid for dealing with these people which is why the general dentist doesn't want to treat them. [Specialist Dentist]

The types of procedures often performed on adults with MHD were also viewed as not particularly conducive to the financial obligations of private practice and reflected dentists' concerns about whether patients could adequately manage the aftercare of certain interventions.

> You are going to avoid doing the high tech sort of things that the patient can't look after. So you are basically going to be patching things up and keeping them going, which also isn't very lucrative. [Dentist]

3.1.4 | Self-care and preventing oral disease seen as limited in people with mental health disorders

Participants often perceived people with MHD as disadvantaged socioeconomically, which impacted on their capacity to maintain their oral health, and adhere to treatment and preventative regimens. Such patients were described as generally having poorer overall health, an inadequate diet, were smokers, had co morbidities and were taking medications detrimental to their oral health. These factors reflected a group with a high level of need who were not accessing regular treatment or prevention. They were also described as typically "non compliant," having low self esteem and less motivation to look after their oral health.

Some participants spoke of the frustration such patients posed, and the unavoidable cycle of simply seeing people when they were in pain and in an emergency.

> Well, it is a bit demoralising because, you know, you fix things up and then they go wrong again quite quickly. Because dental treatment requires cooperation from patients and you do your best to get through to the patient, but it doesn't always happen. [Dentist]

3.2 | Enablers

Along with the barriers, participants also identified "enablers" that could improve the oral health care of people with MHD. These included organizational support for dental professionals to deliver quality care to this population group.

3.2.1 | Training and professional development

Currently, dental health professionals do not receive specific training in any detail for providing care to patients with a mental health disorder. Participants' responses suggested that approaching such patients was largely based on experience gained over years. Many had encountered patients with MHD through their clinical training, both in public clinics and hospitals, including patients in an acute psychiatric ward. Many participants currently treated patients with mental health issues in their private and public practices.

> I think when it comes to dealing with people with mental health disorders in a dental sphere, people really don't know how to deal with it or they don't have any training to deal with that. [Specialist Dentist]

This participant went on to suggest that

> I think it should be mandatory they [dentists] all go to some CPD [continuing professional development] in mental health issues, seeing it is such a problem in our society. [Specialist Dentist]

Another participant identified the importance not just of training dental professionals to work effectively with people with MHD but also medical and allied health professionals to become more aware of oral health in this context.

Participants acknowledged a range of challenges providing treatment to such patients, including that "they are not quick, easy people to deal with." [Specialist Dentist]

Nonetheless, participants also recognized the need for organizational and system level change to support them. Some also acknowledged the need for cultural level change in the approach to people with MHD:

> The profession needs to know or be better equipped to know how to deal with the personal side of these things, not just be able to identify this person is psychotic or schizophrenic or whatever, but to actually link up with the patient on a personal basis to motivate them to keep their oral health good. [Dentist]

Many participants identified the importance of empathy and understanding the difficulties such patients face when providing care. A recurring theme was the need for specific training from undergraduate level through to continuing professional development (CPD). This included strategies for responding to emotional distress, aggression, anxiety, anger and fear that included communicating effectively and establishing a trusting relationship. However, while the need for CPD for dental professionals was noted, participants also acknowledged that many dentists were not interested in

treating patients with MHD, with some actively avoiding them altogether. One participant observed that such training "was not sexy enough." Another noted that CPD courses addressing compassion, empathy and alternative ways of approaching service delivery would not be appealing because dental professionals would not see how such training directly increased their revenue raising capacity. This raises the issue that, despite participants identifying factors enabling improvements to oral health care for people with MHD, systemic, organizational and personal barriers persist, preventing dental professionals making changes.

3.2.2 | Inter-professional approaches to care

Participants frequently noted the need for more comprehensive oral health care for patients with MHD through closer collaboration and coordination among other relevant professionals. Currently, such patients generally self referred for dental treatment and usually because they were in pain. Participants suggested a multidisciplinary team proficient in inter professional communication could facilitate improved coordination and integration of care for mental health consumers. This approach could also assist dental professionals to have greater insights about a patient's mental health status, which often had to be gleaned from a medical history and then only if the patient was taking certain medications, indicating a mental health disorder.

> One of the frustrating things is that a team or a chain is only as strong as its weakest link, so if you have one person who is not coming to the table, and we have to understand that everyone is massively busy so it takes a lot of chasing, a lot of pestering, to get information to try and ascertain what level of health a patient has. [Specialist Dentist]

Enhancing intra professional relationships among dental professionals and better understanding the roles of all members of the oral health care team were also identified by some participants as having the potential to improve communication and mutual respect and generate a consistent team approach that would ultimately enhance patient care.

Educating mental health professionals about oral health and preventing oral disease was also seen as a potential strategy to enhance understanding of the significance of oral health among people with MHD and establish oral health as an intrinsic aspect of their care. Some participants suggested basic oral health education for all health professionals might facilitate greater referral of mental health patients for regular dental check ups. It might also place greater emphasis on advising people about the detrimental oral health impacts of certain medications, and promote the importance of prevention, all factors reflecting the benefits of inter professional education and practice. However, while this was considered an enabling strategy, its implementation had yet to occur.

3.2.3 | Involving families and/or carers in the consultations

An enabling factor in dental professionals' oral health care of people with various MHD included involving a carer or support worker. As one dentist stated "they are much better off if they have got someone keeping an eye on things for them."

Carers or family members who accompanied more dependent patients were seen as having an important role in advocating for their needs, mediating the administrative requirements of attending a service and ensuring patients kept appointments. Participants described how carers' assistance included communicating the patient's needs and ensuring a sense of calm and trust from the patient. The need for a dedicated liaison, intermediary or case manager was also cited as a necessary enabling strategy for overcoming some of the barriers patients experienced within the public system.

This study was conducted in an urban setting in Australia and cannot necessarily be generalized to reflect perceptions of dental professionals working in other countries with different oral health systems. However , responses from the diverse participants indicate challenges dental professionals may face elsewhere in meeting the oral health needs of many people with MHD, who may have other co morbidities and be socioeconomically and educationally disadvantaged.

4 | DISCUSSION

Findings from our study suggest limitations in both private and public systems to support dental professionals to meet the dental needs of people with MHD. Research shows that dentists, the majority of whom enter private practice in Australia, graduate with the highest level of debt and often assume financial risk for start up costs, capital development and service provision.[21] As such, dentists are acutely sensitive to the financial imperatives underlying their approach to providing care and the incentives within the remuneration system that represents their principal source of income. The reality for many is that the extra time needed to build rapport or obtain professional development to better meet the needs of patients with MHD is not remunerated and impacts on overall business profit margins.

These findings highlight a disconnect in the system that fails to adequately support dental professionals in private practice treating patients with MHD and high oral health needs. Instead, participants suggest that meeting the needs of such patients in private practice is not financially viable. This scenario is reminiscent of the Inverse Care Law[22] where those most in need of high quality care are least likely to receive it. Harris[22,23(p165)] suggests that while the Inverse Care Law states that the quality of care is inversely related to patient need, neoliberal or market forces influencing dental practice also plays a role where commercial interests "are a further detriment to good quality care." This leaves questions of who, then, cares for the more disadvantaged people with MHD who have high oral health care needs.

Participants reported that the public dental system was often burdened with long waiting lists. It was viewed by participants as under enormous pressure to meet demand and focused mainly on essential treatments. Participants working in this system often found it inflexible, with onerous administrative requirements that contributed to some patients falling through the gaps and not receiving the ongoing care they need. Study participants often felt frustrated and unsupported despite doing their best to provide high quality care for their patients with MHD. They also felt constrained by the challenges posed when patients failed to turn up for follow up appointments.

While participants acknowledged the importance of preventing oral disease as well as treating it, the current system seems unable to adequately accommodate their needs. Some patients' limited capacity to look after their oral health, particularly when in crisis, compounds the problem. While this suggests the need for sensitivity in responding to such patients, it also highlights a system that has little capacity to accommodate those with special needs and is geared towards throughput and treatment that relieves pain rather than spending time on education about prevention. In the current system, participants viewed prevention and education of people with MHD as an opportunity to establish consistent patterns of oral health care. However, they also thought this approach was incompatible with how adults with a MHD currently engage with the public dental system, which was often ad hoc when requiring treatment when they were in pain. This raises questions about whether the current system focusing on treatment and throughput supports sustained improvements to oral health in people with MHD, or compromises them. Notwithstanding the complexity of this issue, participants identified that oral health in this population could be improved through inter professional practice where, for example, dental professionals collaborate with mental health professionals.

While participants acknowledged the broader social determinants impacting on the oral health of people with MHD and their often limited capacity to adhere to preventative regimens, they also recognized that each patient has different needs. Yet, their views highlight the challenges experienced in a system that appears unresponsive and insensitive to people's lived experience within different social and cultural contexts'.[24] Such findings suggest there is room for improvement in the current system in providing appropriate oral health care to people with MHD. One approach might be to resist holding such patients solely responsible for failing to follow necessary treatment or preventative regimens or turn up for appointments, and instead consider ways the system can be more flexible and responsive to the lived reality of these patients. The use of sanctions or punitive approaches to missed appointments within the public dental system often works against people accessing this system, including patients with mental health issues. This approach fails to take into account the intersection between oral health and the broader socio economic context impacting on people's lived experience. It assumes that people with MHD will or must adapt to the system despite obvious challenges rather than the system being more flexible in meeting their needs.

Issues of non compliance with dental care systems, a reluctance to seek treatment except when in pain, and an association with psychosocial factors detrimental to oral health are beyond the remit of clinical dentistry to resolve in isolation. Similarly, blaming dentists for not offering appropriate care for special needs patients or those from low socio economic groups fails to take into account the complexity and constraints of the system in which they work. Instead, these factors reflect the "whole of system" approach needed to appropriately address the complex determinants that compromise oral health among disadvantaged and vulnerable groups. While the findings from the study are contextual, we suggest that similar themes may be identified in similar settings. Certainly, our findings support other evidence of inequities in health service delivery for people with MHD.[21,25,26] It has been noted that development of appropriate services is needed for this group[21,25] including a more upstream, preventive approach[25] and that inequity in service provision plays a significant role in poorer outcomes.[26] Our findings suggest that some dental professionals feel neither public nor private models of care adequately support their professions to be flexible enough to respond to the often challenging lives of those with MHD and provide the type of care needed. These shortcomings call for a review of current policies and practices aimed at reducing disparities and improving oral health care to people with MHD. Findings also suggest that strategies (including at a structural level) are needed to encourage and support dental professionals to provide oral health care that is inclusive, inter professional, has a focus on prevention while being sensitive to the social context and lived experience of people with MHD if their oral health outcomes are to improve.

5 | CONCLUSION

Our study reveals that adults with MHD and high needs for oral care are least likely to receive it with services often being inadequately prepared to meet the oral health needs of this cohort. Structural barriers such as cost of services and inflexible admission procedures suggest current models of care need reviewing to support dental professionals in providing high quality oral health care that is accessible, inter professional, focused on prevention and sensitive to the social context and lived experience of people with MHD.

ACKNOWLEDGEMENTS

We are grateful to the Office of Mental Health, Department of Health, Western Australia, for funding to assist this study. We thank Julie Pegrum and Dr Anne Read for advice on the manuscript. We thank all of the participants for their valued contribution to the project.

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How to cite this article: Scrine C, Durey A, Slack-Smith L. Providing oral care for adults with mental health disorders: Dental professionals' perceptions and experiences in Perth, Western Australia. *Community Dent Oral Epidemiol*. 2019;47:78 84. https://doi.org/10.1111/cdoe.12427

Factors associated with dental admissions for children aged under 5 years in Western Australia

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Arch. Dis. Child. 2009;94;517-523; originally published online 5 Dec 2008;
doi:10.1136/adc.2008.145672

Factors associated with dental admissions for children aged under 5 years in Western Australia

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Accepted 22 November 2008
Published Online First 5 December 2008

ABSTRACT

Objective: There is limited literature describing dental admissions in preschool children. This paper describes dental hospital admissions and associated factors in children aged under 5 years.

Design: This study uses total population data for Western Australia, which link midwives' information with birth defects, intellectual disability, hospital admissions and deaths. Children born 1980–1995 (n = 383 665) were followed until 5 years. Intellectual disability data were available for children born between 1983 and 1992. Admission data including length of stay were examined.

Outcome measures: Admissions for each relevant 9th Revision of the International Classification of Diseases, Clinical Modification (ICD-9) principal diagnosis category and factors associated with having had a dental admission (all categories) and ICD-9 521 (mostly caries) in particular were investigated.

Results: There were 11 523 dental admissions involving 10 493 children. Of all dental admissions, 76% were in ICD-9 category 521, which included admissions for dental caries. After adjusting for confounders, children with intellectual disability (odds ratio 1.92; 95% CI 1.63 to 2.27) and birth defect 1.85 (1.68 to 2.05) were more likely to have had a dental admission. Children living in a region without fluoridated water were also more likely to have had a dental admission 2.16 (1.94 to 2.40). Males were more likely to have had a dental admission 1.16 (1.08 to 1.25), as were children with an indigenous mother 1.17 (1.02 to 1.34). Investigation of ICD-9 521 admissions showed associations similar to those described above except for mother being indigenous, which was associated with reduced likelihood of admission.

Conclusion: Given the burden of dental admissions in young children, these findings highlight the need for improved oral care for children.

What is already known on this topic

- Hospital admissions for dental reasons for children are a significant burden in health expenditure.
- Most of these dental admissions in children are for conditions that are potentially preventable.

What this study adds

- Population-based information on dental admissions with detailed demographic data including birth data and information on intellectual disability and birth defects including evidence of a twofold increase in dental admissions in an area with no or limited fluoridation of water supply.
- Comparative information on admissions specifically for diseases of hard tissues in the teeth (ie, dental caries) and broader dental admissions, including soft tissue disease.

Despite being largely preventable, dental caries remains one of the most common childhood diseases resulting in substantial health and economic burdens to the community.[1 2] Early diagnosis of dental caries is important to reduce disease progression. Both the Australasian and American Academies of Paediatric Dentistry recommend that an infant is seen by a dentist within 6 months of the eruption of the first tooth (usually around 6 7 months) or by 12 months of age.[3 5] However, in Western Australia (WA) only 38% of children have visited a dental professional by the age of 4 years.[6] Caries that is not treated early or is mismanaged can result in pain and infection requiring extensive dental treatment, which in young children often requires hospitalisation. In Australia, dental caries was the fifth most common reason for hospital admission for 1 to 4 year olds in 1999 2000 and dental categories accounted for 7% of all procedures performed in hospital up to age 14 years.[7] We have recently investigated hospital admissions in children aged under 5 years with and without intellectual disability (ID) and found that those with ID had an increased relative risk of dental admission.[8] The cost of providing dental treatment for young children under general anaesthesia has been reported in the USA as US$2,009 per case[9] while in WA the average cost for hospital extractions and restorations for all ages was A$2,011 per case.[10]

Factors such as age, Australian state of residence and private health insurance influence whether a young child attends a dental professional.[6] There is, however, limited information regarding the factors associated with a child being hospitalised for dental treatment. Past studies, mostly conducted overseas, have focused on case series of children presenting to recognised centres for management.[11] These are complicated by the fact that policies relating to treatment vary by centre and change over time.[12] In one hospital based Australian study, children receiving dental treatment under general anaesthesia were largely of preschool age with significant dental disease.[13] Less than 10% had dental trauma and many had associated medical or behavioural problems.[13] In addition to the nature

and severity of the dental disease, ID may make hospitalisation necessary or preferable due to both behaviour management and the increased tooth destruction resulting from inadequate oral hygiene, poor diet, trauma, teeth grinding and acid regurgitation.[14] Other factors associated with a dental admission may include family and child characteristics, service availability, current attitudes of practitioners and cultural attitudes towards oral health.

To investigate factors associated with dental admissions in children from WA, we undertook a record linkage study. The WA Maternal and Child Health Research Database contains data for all children born in WA since 1980[15 16] and has linkable information on births and deaths (Midwives Notification System, Registrar General database), discharge data from all public and private hospitals in WA (Hospital Morbidity Data System), the WA Birth Defects Registry[17] and the WA Intellectual Disability Database (1983 1992).[18] The Midwives' Notification System contains data statutorily collected at birth by attending midwives and has been validated previously.[16 19] The proportions of invalid (false positives) and missed links (false negatives) have been estimated in the Hospital Morbidity Data to both be 0.11%.[20]

The aims of this study were twofold: (1) to describe dental admissions, and (2) to determine factors associated with children having had a dental admission under the age of 5 years.

METHODS

Source of the data

The study used linkable records for children liveborn in WA during 1980 1995 (n = 383 665). Dental admissions for these children were investigated up to 5 years of age. Birth defect (BD) data were available for the whole cohort; ID data were available only for children born from 1983 to 1992 (n = 3522).

Hospital admissions and diagnosis codes

The data were investigated to determine the type of dental admission, length of stay and factors associated with having a dental admission. The length of stay for same day admissions was arbitrarily set at 0.5 days.[8] Unless otherwise specified, a dental admission was defined as an admission to hospital where the principal diagnosis at discharge was coded using any of the following codes from the 9th Revision of the International Classification of Diseases, Clinical Modification (ICD 9): 520.0 529.9; V41.6; V52.3; V53.4; V58.5; or V72.2 (table 1).[21] Admissions related to dental trauma (ICD 9 codes 873.6 and 873.7) were excluded (n = 1295). Admissions from 1 July 1999 were coded using ICD 10 AM and these codes were converted to ICD 9 for these analyses.

Description and associations of admissions

Associations were estimated between a dental admission in a child aged up to 5 years of age and sex, birthweight, year of birth, Socio Economic Indexes for Areas (SEIFA) (explained below), health insurance, mother's age group, health region, rurality, mother's indigenous status, presence of ID and presence of a birth defect. As a measure of socioeconomic disadvantage related to geographic location, the Index of Relative Socio Economic Disadvantage from the SEIFA codes was allocated by Collection District of mother's residence at the time of birth. Collection Districts are the smallest area units used by the Australian Bureau of Statistics and contain about 250 dwellings each.[22] The SEIFA codes for disadvantage are derived from attributes such as low income, low educational attainment and high unemployment and are a relative indicator of area socioeconomic disadvantage.[22] SEIFA codes were grouped in quartiles with the most disadvantaged group being <25%. SEIFA codes were not available for birth years 1980 1983. Assignment to metropolitan, rural and remote and health region categories was based on postcode information provided by the Department of Health of WA. Perth Metropolitan Area has two health regions and rural WA is divided into seven health regions (see footnote table 2).

Statistical analysis

Descriptive analyses and logistic regression modelling were undertaken using SAS Version 9.1. Presence of an association between variables was measured using the chi squared test and trends with Mantel Haenszel chi squared test. Odds ratios (ORs) and 95% CI were calculated.

The multivariable model was constructed by taking variables in descending order of significance and adding one at a time and reviewing the model while also considering which variables were relevant from prior knowledge.[23] Where variables were known to be measuring the same impact on the outcome, only one was included in the model.[24] Hosmer and Lemeshow goodness of fit was determined using the LACKFIT option in

Table 1 Dental admissions in children aged up to 5 years, by ICD-9 category

ICD-9 code	and description	Dental admissions (n = 11 523)	Dental admissions (%)	Children admitted (n = 10 493)
520	Disorders of tooth development and eruption	427	3.7	421
521	Diseases of hard tissues of teeth	8788	76.3	8217
522	Diseases of pulp and periapical tissues	1149	10.0	1098
523	Gingival and periodontal diseases	114	1.0	113
524	Dentofacial anomalies including malocclusion	19	0.2	19
525	Other diseases and conditions of the teeth and supporting structures	75	0.7	75
526	Diseases of the jaws	44	0.4	38
527	Diseases of the salivary glands	132	1.2	122
528	Diseases of the oral soft tissues excluding lesions specific for gingiva and tongue	626	5.4	605
529	Diseases and other conditions of the tongue	38	0.3	37
V codes*	Fitting devices and special investigations	111	1.0	105

*V codes include V523 (fitting and adjustment of prosthetic device), V534 (fitting and adjustment of other device orthodontic devices) and V722 (special investigations and examinations dental examination).
ICD 9, 9th Revision of the International Classification of Diseases, Clinical Modification.

Table 2 Univariable analysis of factors potentially associated with a child having a dental admission* and those with dental ICD521 (disease of hard tissue of teeth) admission before the age of 5 years for birth years 1980–1995

	Child with a dental admission (n = 10 493)	All children (%)	OR (95% CI)	Child with a 521 admission (n = 8217)	All children (%)	OR (95% CI)
Sex						
Male	5754	2.9	1.15 (1.11 to 1.20)	4509	2.3	1.15 (1.10 to 1.20)
Female	4739	2.5	1.00 (Reference)	3708	2.0	1.00 (Reference)
Birthweight						
<2500 g	615	2.7	1.00 (0.92 to 1.09)	459	2.0	0.95 (0.86 to 1.04)
2500 g+	9878	2.7	1.00 (Reference)	7758	2.1	1.00 (Reference)
Birth defect						
Yes	918	4.7	1.83 (1.71 to 1.96)	703	3.6	1.78 (1.64 to 1.92)
No	9575	2.6	1.00 (Reference)	7514	2.1	1.00 (Reference)
Intellectual disability†						
Yes	214	6.1	2.47 (2.14 to 2.84)	171	4.9	2.42 (2.07 to 2.83)
No	6119	2.6	1.00 (Reference)	4937	2.1	1.00 (Reference)
Birth order						
1	4154	2.8	1.00 (Reference)	3360	2.2	1.00 (Reference)
2	3283	2.6	0.93 (0.89 to 0.98)	2560	2.0	0.90 (0.85 to 0.95)
3	1874	2.8	1.02 (0.96 to 1.07)	1453	2.2	0.97 (0.91 to 1.04)
4	741	3.1	1.12 (1.04 to 1.22)	541	2.3	1.01 (0.92 to 1.11)
5+	392	3.2	1.15 (1.04 to 1.28)	265	2.1	0.96 (0.84 to 1.09)
Year of birth‡						
1980	402	1.9	1.00 (Reference)	281	1.4	1.00 (Reference)
1981	432	2.0	1.01 (0.88 to 1.15)	314	1.4	1.05 (0.89 to 1.23)
1982	524	2.4	1.22 (1.07 to 1.39)	410	1.8	1.36 (1.17 to 1.59)
1983	608	2.7	1.37 (1.21 to 1.56)	473	2.1	1.53 (1.32 to 1.78)
1984	569	2.5	1.29 (1.13 to 1.47)	458	2.0	1.48 (1.28 to 1.72)
1985	562	2.4	1.25 (1.10 to 1.42)	450	1.9	1.43 (1.23 to 1.67)
1986	588	2.5	1.28 (1.12 to 1.45)	457	1.9	1.42 (1.22 to 1.65)
1987	595	2.5	1.28 (1.12 to 1.45)	498	2.1	1.53 (1.32 to 1.78)
1988	605	2.4	1.25 (1.10 to 1.42)	495	2.0	1.46 (1.26 to 1.70)
1989	638	2.5	1.30 (1.14 to 1.47)	527	2.1	1.54 (1.33 to 1.78)
1990	726	2.8	1.45 (1.29 to 1.65)	587	2.3	1.68 (1.46 to 1.94)
1991	676	2.7	1.41 (1.24 to 1.60)	549	2.2	1.64 (1.42 to 1.89)
1992	766	3.0	1.58 (1.40 to 1.78)	614	2.4	1.81 (1.57 to 2.09)
1993	841	3.3	1.74 (1.54 to 1.96)	651	2.6	1.92 (1.67 to 2.21)
1994	967	3.8	2.00 (1.78 to 2.26)	725	2.9	2.14 (1.86 to 2.46)
1995	994	3.9	2.06 (1.83 to 2.32)	728	2.9	2.15 (1.87 to 2.47)
Mother's indigenous status						
Non indigenous	9819	2.7	1.00 (Reference)	7952	2.2	1.00 (Reference)
Indigenous	665	3.2	1.18 (1.09 to 1.28)	257	1.2	0.55 (0.49 to 0.63)
Maternal age (years)						
10 24	3437	2.9	1.14 (1.09 to 1.20)	2517	2.1	1.04 (0.99 to 1.10)
25 29	3636	2.6	1.00 (Reference)	2899	2.1	1.00 (Reference)
30 34	2475	2.7	1.04 (0.99 to 1.10)	2029	2.2	1.07 (1.01 to 1.13)
35 49	936	2.9	1.13 (1.05 to 1.21)	764	2.4	1.15 (1.07 to 1.25)
Health insurance§						
Public	4672	2.7	1.00 (Reference)	3383	2.0	1.00 (Reference)
Privately funded	5277	2.8	1.04 (1.00 to 1.09)	4438	3.0	1.22 (1.16 to 1.27)
SEIFA group¶						
<25%	1947	2.9	1.00 (Reference)	1437	2.2	1.00 (Reference)
25 50%	2056	3.1	1.05 (0.98 to 1.12)	1621	2.4	1.12 (1.04 to 1.21)
50 75%	1724	2.7	0.93 (0.87 to 0.99)	1375	2.2	1.01 (0.94 to 1.09)
>75%	1682	2.5	0.85 (0.80 to 0.91)	1400	2.1	0.96 (0.89 to 1.04)
Region						
Metropolitan	6412	2.4	1.00 (Reference)	5127	1.9	1.00 (Reference)
Rural	2918	3.9	1.65 (1.57 to 1.72)	2218	3.0	1.56 (1.48 to 1.64)
Remote	1146	2.8	1.17 (1.09 to 1.24)	858	2.1	1.09 (1.01 to 1.17)
*Health region***						
Metropolitan						
North Metro	3220	2.3	1.00 (Reference)	2527	1.8	1.00 (Reference)
South Metro	3182	2.6	1.15 (1.09 to 1.21)	2593	2.1	1.19 (1.13 to 1.26)
Rural						

Continued

Table 2 Continued

	Child with a dental admission (n = 10 493)	All children (%)	OR (95% CI)	Child with a 521 admission (n = 8217)	All children (%)	OR (95% CI)
Goldfields South East	468	2.9	1.28 (1.16 to 1.41)	353	2.2	1.23 (1.10 to 1.37)
Great Southern	467	3.7	1.68 (1.52 to 1.85)	367	2.9	1.67 (1.50 to 1.87)
Kimberley	213	2.4	1.07 (0.93 to 1.23)	140	1.6	0.89 (0.75 to 1.06)
Midwest Murchison	491	3.7	1.67 (1.51 to 1.84)	308	2.3	1.32 (1.17 to 1.49)
Pilbara Gascoyne	568	3.0	1.35 (1.23 to 1.47)	427	2.3	1.29 (1.16 to 1.43)
South West	1159	4.7	2.12 (1.98 to 2.27)	975	3.9	2.26 (2.10 to 2.44)
Wheatbelt	694	3.3	1.48 (1.36 to 1.61)	504	2.4	1.36 (1.24 to 1.50)

*Figures on left include all data on dental admissions (all ICD codes included in table 1), right includes admissions for ICD code 521 (diseases of hard tissues of teeth).
†Intellectual disability only available for years 1983 1992.
‡Mantel Haenszel chi squared test for trend for year of birth was significant.
§Birth year 1996 not available for insurance variable.
¶Birth years 1980 1983 not available, <25% is most disadvantaged group.
**Rural health region maps at http://www.health.wa.gov.au/services/detail.cfm?Unit_ID=2283
ICD, International Classification of Diseases; OR, odds ratio; SEIFA, Socio Economic Indexes for Areas.

SAS.[25] Only years in which SEIFA and ID data were available were included in the multivariable analysis.

Analyses for tables 3 and 4 were repeated for first admission only to ensure there was no effect from non independent data. Tables 1, 2 and 5 include child as the unit of analysis rather than admission.

Ethics

This study received approval from the Human Research Ethics Committee of the University of Western Australia and the Confidentiality of Health Information Committee, WA.

RESULTS

For children under 5 years of age, dental admissions accounted for 3.0% (n = 11 523) of all dental admissions to hospital and 2.7% (n = 10 493) of all children admitted to hospital (table 1). Before 5 years, children with dental admissions were most frequently admitted under ICD 9 category 521 (diseases of hard tissues of teeth, primarily dental caries, table 1) comprising 76% of all dental admissions in this age group. On further investigation of ICD procedure codes (investigated for years 1988 1999) it was determined that 75% of children admitted with ICD 9 528 (diseases of oral soft tissues) as primary diagnosis did not have any hospital procedure recorded. In contrast, 99% of children admitted as ICD 9 521 had a hospital procedure recorded, which was mostly removal or restoration of teeth (94%).

Of dental admissions before 5 years of age, 78% were day admissions with 83% of these being for ICD 9 category 521 (table 3). Ninety five per cent of admissions were for less than 3 days and 5% were for 3 or more days. Before the age of 1 year, the mean length of stay for children with a dental admission was 2.8 days (table 4). This reduced to 0.6 days by the age of 5 years. The admissions per 1000 live births at the beginning of the age period increased from 0.7 at 1 year to 10.5 by age 5 years. The comparisons shown in tables 3 and 4 remain similar when the analyses were restricted to the first admission (data not shown). The proportion of children aged up to 5 years who were admitted to hospital with a dental diagnosis in WA had doubled over the time period studied (table 2).

Table 3 Length of hospital stay for dental admissions

	Dental admissions	
	All dental	ICD521 only
Length of stay	n = 11 523 (%)	n = 8788 (%)
Day admissions	8961 (77.8)	7442 (84.7)
1 2 days	2032 (17.6)	1317 (15.0)
3 6 days	397 (3.4)	21 (0.2)
7+ days	133 (1.2)	8 (0.1)

ICD, International Classification of Diseases.

In comparison, the proportion of children admitted increased for "Diseases of hard tissues of teeth" (1.36% to 2.88%) and "Diseases of the pulp and periapical tissues" (0.04% to 0.73%), while admissions for "Diseases of the oral soft tissues excluding lesions specific for gingiva and tongue" decreased (0.7% to 0.1%). The increase in dental admissions was in the public, uninsured patients.

Characteristics found to be significantly associated with a child having had a dental admission included being male, being born with a birth defect, being identified with an ID, and having an indigenous mother. Children of older mothers and very young mothers were more likely to have had an admission. The second born child was marginally less likely than the first born to be admitted: OR 0.93 (0.89 to 0.98). However, children fourth or more in birth order were marginally more likely to have had a dental admission. Children born in a household with a SEIFA disadvantage score in the most disadvantaged group (<25%) were more likely to have been admitted compared with those in the least disadvantaged group (>75%). Children born in a rural area were more likely to have had a dental admission. Indigenous status of mother was a risk factor for overall dental admissions but protective for 521 admissions.

The South West region includes the town of Bunbury, a large regional centre with a non fluoridated community water supply, while many homes in this region but outside Bunbury have rainwater tanks and bores as their water supply which may also reduce exposure to fluoride.

Factors associated with a child having an ICD 9 521 admission were being male, having a birth defect, having an ID, having a young or older mother and having private insurance (table 2). As might be expected, a child with a birth defect was more likely to be admitted for a "disease of the jaw" OR 9.5 (5.2 to 17.3) and "diseases and other conditions of the tongue" OR 2.8 (1.3 to 6.1). A child with an ID was more likely to be admitted for "gingival and periodontal diseases" OR 3.7 (1.7 to 8.2). A child living outside the metropolitan area was more likely to be admitted for "diseases of the oral soft tissues excluding lesions specific for gingiva and tongue" OR 3.3 (2.8 to 4.0), "gingival and periodontal diseases" OR 3.6 (2.4 to 5.3) or "disorders of tooth development and eruption" OR 1.3 (1.1 to 1.6). When compared with children

Table 4 Dental admissions and length of stay up to the age of 5 years, birth years 1980–1995

Age	Number of children admitted	Number of admissions	Admissions/1000 per year*	Length of stay			
				Mean†(days)	SD (days)	Median (days)	Maximum (days)
0 <1 year	280	293	0.8	2.9	3.0	2.0	17
1 <2 years	1006	1033	2.7	1.9	3.0	0.5	33
2 <3 years	2335	2425	6.4	0.9	4.5	0.5	212
3 <4 years	3679	3788	10.0	0.7	1.1	0.5	47
4 <5 years	3836	3984	10.5	0.6	0.5	0.5	10
0 <5 years	10 493	11 523	30.3	0.9	2.4	0.5	212

*Admissions/1000 per year based on children surviving at that age; total for those surviving 5 years.
†The use of the mean here is with caution given the skewed nature of the distribution.

with a non indigenous mother, children with an indigenous mother were more likely to be admitted for ''diseases of the oral soft tissues excluding lesions specific for gingiva and tongue'' OR 21.8 (17.8 to 26.6), ''gingival and periodontal diseases'' OR 15.6 (10.4 to 23.6) and ''diseases and other conditions of the tongue'' OR 9.7 (4.5 to 20.7).

A logistic regression model (unit of analysis: child) was determined taking into account our prior knowledge of important factors (table 5). All of these factors remained significant for a child having a dental admission. Children in the South West region remained more likely to have a dental admission compared with the Metropolitan comparison group OR 2.16 (1.94 to 2.40). An interaction was identified between BD and ID so the model in table 5 was compared with a model where these factors were excluded, producing a model almost identical to the first. The final model is provided in table 5.

DISCUSSION

Many of the dental problems identified through these data could have been diagnosed and progression of disease prevented if there had been an early, preventive dental visit.[26] In general, this age group has not yet accessed the Western Australian School Dental Service and only about 40% of children have visited a dental professional by age 5 years.[6] There are limited international population data on age at first dental visit but a higher proportion of children in Nova Scotia, Canada than in WA were found to have had a dental visit where dental visits were covered by a universal health system.[6 27]

The proportion of children aged up to 5 years who were admitted to hospital with a dental diagnosis in WA had doubled over the time period studied. We have investigated any changes in this group and the increase was in public patients but there is no clear reason for the increase; it is much more likely to be a combination of factors. It has been postulated that high standard of practice in dental general anaesthesia, in line with international guidelines, has moved more cases into a hospital setting.[13]

A hospital admission is not a simple measure of disease. The early behavioural model of Andersen for the use of health services considered predisposing characteristics, enabling resources and need resulting in use of health services, and provided a useful model for considering the context of these results.[28 29] Factors such as access to hospital services, availability of non hospital services and ability to pay were also important in determining which children had a dental admission, as are the current attitudes of clinicians and policies in place. The application of a deprivation index to hospital admission data enables more accurate assessment of service utilisation by differing socioeconomic groups[30] and we were able to address this comparison in our study using SEIFA.

As indicated in the available literature, indigenous children may have lower rates of dental admission[31 33] but, in the present study, indigenous status of mother was a risk factor for all dental admissions although protective for 521 admissions. Children with ID in this study had higher rates of dental admissions, as shown previously.[8] Children with BD were also more likely to have a dental admission this does not appear to have been previously reported. Clearly some children with BD require specific dental surgery (eg, cleft lip) while for other children with BD or ID, management of oral care may be difficult. BDs are heterogeneous and it may be useful in future to investigate dental admissions in particular subgroups. In this study it was possible to differentiate general oral cavity disorders, for example, mouth ulcers from dental caries. It is important to understand better the reasons for deciding on hospital admission rather than treatment outside of hospitals.

Despite the value of the population based data available, there were limitations in this study. Only children born in WA were included so those who migrate into the state were excluded. The denominators were also potentially exaggerated from lack of data on migration to other states or outside Australia. However, the data provide indigenous identification which is likely to be better than hospital records alone, where identification concerns have been raised.[31] A major limitation in interpreting indigenous admissions is poor understanding of the underlying reasons for treating the child in hospital. Finally the SEIFA is based on the local area measure rather than the individual level and interpretation as an individual measure may risk ecological fallacy, although the value of area based contexts has also been recognised and may be relevant to dental research.[34 35]

The dental morbidity occasioning these admissions is almost entirely preventable[1] and although these data help to plan services and target prevention, much of the burden of dental disease could be prevented if dental care was oriented towards oral examinations for all children by the first birthday and active prevention supported by a range of health professionals. Future research should focus on the impact of family and child factors and on subgroups such as indigenous children, children with ID and BD and those without community water fluoridation using linkable data. Also it is important to determine what health services children in the highest risk

Table 5 Logistic regression model of factors potentially associated with a child having a dental admission* before the age of 5 years for birth years 1984–1992

Variable	OR (95% CI)	p Value
Health region		
Goldfields South East vs North Metro	1.19 (1.02 to 1.38)	<0.0001
Great Southern vs North Metro	1.74 (1.48 to 2.05)	
Kimberley vs North Metro	1.26 (0.98 to 1.61)	
Midwest Murchison vs North Metro	1.59 (1.37 to 1.85)	
Pilbara Gascoyne vs North Metro	1.34 (1.18 to 1.53)	
South Metro vs North Metro	1.1 (1.03 to 1.18)	
South West vs North Metro	2.16 (1.94 to 2.40)	
Wheatbealt vs North Metro	1.40 (1.20 to 1.63)	
Year of birth		
1985 vs 1984	1.00 (0.88 to 1.14)	<0.0001
1986 vs 1984	1.05 (0.93 to 1.19)	
1987 vs 1984	1.02 (0.90 to 1.16)	
1988 vs 1984	0.99 (0.87 to 1.12)	
1989 vs 1984	1.08 (0.96 to 1.23)	
1990 vs 1984	1.20 (1.07 to 1.36)	
1991 vs 1984	1.15 (1.01 to 1.30)	
1992 vs 1984	1.30 (1.15 to 1.47)	
Birth defect		
Yes vs no	1.85 (1.68 to 2.05)	<0.0001
Health insurance		
Privately funded vs public	1.31 (1.22 to 1.39)	<0.0001
Maternal age (years)		
10 24 vs 25 29	1.16 (1.08 to 1.25)	<0.0007
30 34 vs 25 29	1.00 (0.93 to 1.08)	
35 49 vs 25 29	1.04 (0.93 to 1.17)	
Sex		
Male vs female	1.16 (1.08 to 1.25)	<0.0001
Birth order		
2 vs 1	0.93 (0.87 to 0.996)	<0.0002
3 vs 1	1.06 (0.97 to 1.15)	
4 vs 1	1.13 (0.999 to 1.28)	
5 21 vs 1	1.25 (1.06 to 1.47)	
Mother's indigenous status		
Indigenous vs non indigenous	1.17 (1.02 to 1.34)	<0.0214
SEIFA group		
75% vs <25%	0.88 (0.80 to 0.96)	<0.0093
25 50% vs <25%	0.99 (0.92 to 1.08)	
50 75% vs <25%	0.93 (0.85 to 1.01)	
Intellectual disability		
Yes vs no	1.92 (1.63 to 2.27)	<0.0001
Birthweight		
<2500 g vs 2500 9999 g	0.88 (0.78 to 0.997)	<0.0446

*As defined in Methods.
n = 191 489, Hosmer and Lemeshow goodness of fit test chi square 6.69 8 degrees of freedom p<0.57.
SEIFA, Socio Economic Indexes for Areas.

groups do access in the early years to encourage prevention and an early dental visit and what is required in such early dental visits to decrease the need for dental admissions in young children.

Acknowledgements: The authors would like to thank Peter Cosgrove for his assistance in extracting the data, and Dr Beverly Petterson and Dr Anne Read for valued advice on this study.

Funding: The study was assisted by funds from the Department of Health, Western Australia.

Competing interests: None.

Ethics approval: This study received approval from the Human Research Ethics Committee of the University of Western Australia and the Confidentiality of Health Information Committee, WA.

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IN BRIEF

- Inequalities in health service use are also seen in dental service use by the aged.
- Disadvantaged aged are clearly not attending dental professionals.
- These disadvantaged groups need targeting before the impact of age restricts their access to treatment.
- Prevention is important in these groups — resource allocation is a dental priority.
- Dental care of older persons requires innovative long-term strategies.

The relationship between demographic and health-related factors on dental service attendance by older Australians

L. Slack-Smith[1] and J. Hyndman[2]

Objective To determine factors associated with dental attendance by those of 60 years or older in a population-based sample.
Design Cross-sectional national health survey.
Setting The study used data from the Australian 1995 National Health Survey, which consisted of people interviewed by households.
Subjects and Methods A total of 7,544 eligible respondents randomly selected by households from defined statistical areas.
Main outcome measures The main outcome investigated in this study was having had a dental visit in the previous 12 months.
Main results Age, income, level of social disadvantage, level of education, uptake of private health insurance, smoking, exercise, self assessment of health and having a health concession card all independently influenced the attendance ratios. In combination, after adjusting for all other factors, factors associated with having visited a dentist for males were age, years of schooling, level of social disadvantage, exercise level index, possession of a health concession card and smoking status. Factors associated with having visited for females were age, education, exercise, smoking status and some levels of the interaction between possession of a health concession card and level of social disadvantage.
Conclusions The strong influence of age, education, exercise and smoking status indicated a need to target dental services towards those elderly persons in low attendance groups, which mostly represented disadvantaged groups.

INTRODUCTION

The need to deal with the increasing demand for dental services in the aged and the need to move from emergency treatment to prevention are relevant internationally.[1] In the USA, the Surgeon General's report on oral health has identified the need for health services research in dental services and has also noted the disparities in use of services and outcomes in some population subgroups including the aged.[2] Poor oral health in older persons can seriously affect their quality of life.[3–6] A range of factors may be associated with the use of dental services in adults including age, sex, ethnicity, education level, health status, marital status, employment, socio-economic status, cost of service, uptake of dental insurance, health beliefs and dental anxiety.[7,8] In a US study, Manski found age, sex and ethnic background to be associated with dental service use while health-related factors were not associated.[9]

In Australia, despite the fact that most oral diseases are preventable, the annual cost of dental treatment exceeds AUD$1.8 billion (US $1.18 billion, €1.01 billion at 23 May 2003).[10] This cost is predominately for treatment rather than preventive services. Dental services for adults in Australia consist of an extensive private system with some state-based public dental care for those with healthcare cards (which are generally given to those receiving government assistance who have lower income).[11] In Australia, as with overseas, the aged have been identified as being at risk of poor oral health.[12,13] However, the demand for dental services in the aged exceeds public capacity and there is a subsequent emphasis on emergency treatment rather than preventive care.[14] The increasing proportion of aged in the population and increasing retention of teeth in older persons will increase demand on dental services even further in this group.[9,13,15]

It has been recognised that there is a need for detailed data regarding oral health in older Australians and their dental service needs.[16] One of the few population-based published studies looked at broad factors associated with the use of dental services in those over 15 years in a previous 1989–90 National Health Survey in Australia.[11] To improve dental services for the over 60s, a detailed understanding of why and how they use services is required. Many studies lack detailed consideration of variables of potential interest, and are not based on population data of adequate size. In addition, aggregate quantitative data often does not demonstrate the oral health needs of segments of society that are substantially disadvantaged.[3]

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Refereed Paper
Received 17.06.02; Accepted 07.11.03
doi:10.1038/sj.bdj.4811571

This study investigated the differences between those aged 60 years or more, who have and have not had a dental visit in the previous year. Data were obtained from the Australian 1995 National Health Survey.[17] The analysis was in two stages: initial descriptive statistics identifying factors associated with attendance at dental services in the previous 12 months and logistic regression analysis describing the influence and interrelationship between factors on the outcome of attendance or not at dental services in the previous year. The use of multivariable analysis in such investigation is supported.[9]

METHODS

This study used data made available from the Australian National Health Survey 1995. In the survey, the total unweighted response rate by households was 91.5%. Questionnaires were obtained from 97% of the eligible people in these households.[17] There were 7,602 respondents aged 60 years or over in the 1995 Australian National Health Survey sample. The outcome of interest for this study was having visited a dental professional in the previous 12 months. Of the 7,602 respondents, 58 did not know when they had last seen a dental professional and these cases were omitted from the analysis (leaving 7,544 eligible respondents).

Since every member of selected households was surveyed, there was the possibility of correlation between responses. However investigation of attendance behaviour between respondents in the same households showed no evidence of a bias resulting from related attendance behaviour ($\chi^2 = 3.36$, $P = 0.066$).

Weights

The Australian Bureau of Statistics provided a weight for each record in the 1995 National Health Survey.[17] Weights were applied to the survey data to reflect the full Australian population. Application of the weights to the sample in the National Health Survey data resulted in a population of 2,835,198 people 60 years and over. This compared with the Australian 1996 Population Census count of 2,834,625 people in this age group.[18]

Univariate analysis

Characteristics of interest were considered for association with having visited a dental professional in the previous 12 months. These were considered in four groups: the relationship with the *demographic variables* of age, sex, education, ethnicity, income, level of social disadvantage and presence of another adult in the household; the relationship with elective and government sponsored *insurance schemes;* the relationship with smoking and exercise which are *health behaviour variables;* and the relationship with *personal health factors* including self assessment of health, the presence of arthritis and the use of pain relief medication for dental conditions.

Demographic variables

The variable 'age first left school' was the most appropriate measure of level of education for the purpose of this analysis. There is some evidence that some groups are more likely to attend dental care than other Australians, for example migrants over 65 years.[19] One measure of ethnicity on the National Health Survey questionnaire was the usual language spoken at home. This was selected for use in the analysis as a more appropriate measure of retention of cultural behaviour than the other possible variable of country of birth, for which many individual categories were too small for meaningful interpretation.

Since dental services are not covered by the Australian universal medical insurance scheme (Medicare), some measure of wealth was required to clarify whether respondents did not attend the dentist because they could not afford it. The measure of income used in the analysis was the equivalent income decile. The Socio-economic Indices for Area (SEIFA) index of social disadvantage provided a measure of social disadvantage in the area the person lived. This was based on the attributes of the population within Collectors' Districts. These are the smallest area units used by the Australian Bureau of Statistics and contain about 250 dwellings each.[20] Each response was therefore coded as belonging to one of five quintiles of social disadvantage according to the location of their residence.

It was also thought that the availability of personal support could influence attendance at dental services for the age group of respondents included in this study. A surrogate for level of personal support was derived using a field that indicated the presence of another adult in the household. However, it should be noted that there was no information available about the possible input from social support agencies.

Health insurance variables

A federal scheme supported dental care in needy adults from 1994 to 1996, but generally public dental care is provided by states to selected disadvantaged adults.[11] Unless the patient is eligible for these subsidised dental services, they must pay the cost of private dental care.

Australians have to arrange for their own private health insurance if they wish to be reimbursed for their dental expenses. This insurance may be for ancillary benefits only (such as dental, glasses, physiotherapy, ambulance) or include hospitalisation cover. The National Health Survey collected information on private health insurance and whether that insurance covered ancillary benefits usually including dental cover.

Half of the respondents, who were allocated to the SF-36 (Short Form 36 health status questionnaire) survey subgroup of the 1995 National Health Survey using a General Health and Well-Being Form, were not asked the questions on health insurance.[21] This was part of the original study design.[17] Of the remaining respondents, 43% had some private health insurance and of these 64% had ancillary cover that may or may not include dental insurance. In addition, 1.8% did not know what type of insurance cover they had. Older people in Australia were more likely to be in receipt of a health concession card than younger compatriots.

Health behaviour variables

The National Health Survey conducted in 1995 provided data on the smoking status of respondents: smokers, ex-smokers and never smoked. As an indicator of a respondent's mobility the data item Exercise Level Index was used. The percentage of the elderly respondents in each category were: vigorous (2%), moderate (26%), low (30%) and sedentary (42%).

Personal health variables

Respondents were asked for their personal assessment of their health using the five categories of excellent, very good, good, fair and poor. The National Health Survey asked specific questions about presence of arthritis. In this paper the derived variable of the presence of arthritis (either osteo or rheumatoid) that was expected to last for more than 6 months, was related to the use of dental services in the previous year. The raw numbers indicated that 40% of those aged 60 years or more reported a long-term arthritic condition.

Statistical tests

The test for significance used for all of the univariate analysis was the *t*-test for differences in attendance ratios between variables that had two levels. The regression test for linear trend in attendance ratios was used for variables with more than two levels.

Multivariable analysis

A logistic regression model was formulated to determine variables which were associated with attendance at dental services. The analysis was performed as a stepwise regression in SAS.[21] Normalised population weights were applied to the sample frame in order to reflect the population profile. In order to obtain results most useful for public health intervention programmes, the multivariable analysis was undertaken for males and females separately.

Variables with missing values or small responses

Two of the variables used in the univariate analysis had high counts of missing values: decile of equivalent income had 17% of responses with missing values, and private insurance status had 50% missing values where these questions were skipped for those respondents allocated the SF-36 sub sample. These two fields were omitted from the multivariable analysis, as inclusion would have eliminated more than 50% of the records.

There were only 17 affirmative sample responses to the use of pain medication for dental pain so the variable was excluded from the multivariable model.

Logistic regression model: The following interactions were tested for each of the two models (male and female):

- Age with: age, years at school, possession of a health concession card, self assessment of health, exercise level index, presence of another adult in the household and the SEIFA index quintile, and
- SEIFA index quintile with: possession of a health concession card and usual language spoken at home.

RESULTS

Univariate analysis

Table 1 shows the percentage of respondents who had attended a dental professional within the previous 12 months by the demographic variables of age, sex, education, ethnicity, income, social disadvantage and the presence of another adult in the household. Males were more likely to have attended dental services within the past 12 months than females (36.3% versus 33.5% t-value = 2.52, P = 0.012). Older respondents were less likely to have attended dental services in the past year. There was a marked trend over the 5-year age groups with 40% of the 60–64-year-olds attending within the past year compared with 21% of those aged 80 years and over. Figure 1 shows the difference in the attendance proportion, for males and females, over age groups. The males had higher attendance ratios in the over 70-year-old age groups than females, and vice versa for the younger age groups.

The positive effect of a higher level of school eduction on recent dental attendance was significant. This variable showed a clear trend despite the age of the respondents. Our study showed that respondents who did not usually speak English at home had a significantly higher attendance ratio than those who spoke English at home.

The data clearly indicated the relationship between attendance at dental services and income. Respondents from less disadvantaged areas were more likely to attend dental services than those in disadvantaged areas. Figures 2 and 3 illustrate the consistently detrimental effect of living in socially disadvantaged areas, compared with least disadvantaged areas, on attendance at dental services irrespective of exercise level indices or levels of self assessment of health (see results for exercise levels and self assessment of health).

There was a significantly higher level of attendance at dental services for those who had another adult in the house. While this effect was significant for both males and females, the P-value was lower for males.

Relationship with elective health insurance, health behaviour and personal health factors

Respondents who were covered by ancillary health insurance (which would normally cover dental expenses) had significantly higher attendance ratios than those who did not (Table 2).

Those respondents who had a health concession card provided by the government were significantly less likely to have attended dental services in the previous year than those who did not. Investigation showed that those with a concession card were more likely to live in the most disadvantaged rather than least disadvantaged areas ($P < 0.0001$), to be in poor rather than excellent health ($P < 0.0001$), not to have ancillary health insurance ($P < 0.0001$) and to have a lower level of schooling ($P < 0.0001$). All these associated factors contributed to the outcome of having a concession card and not attending dental services.

The attendance at dental services within the last year by smoking status showed that there was a significant difference in the attendance ratios between smokers and ex-smokers ($P < 0.0001$) and between smokers and never smoked ($P < 0.0001$).

Younger respondents, in the 60-64 years old age group, were more likely than older respondents to have attended dental services if they had never smoked. The results for the older respondents were more mixed, but those who were aged 70 years or more were more likely to have attended if they were ex-smokers.

Level of exercise was a strong determinant of attendance at dental services, with those who reported undertaking vigorous exercise more likely to attend dental services than those who reported sedentary levels of exercise. Figure 2 illustrates the effect of increasing attendance at dental services with higher levels of activity, as well as the strong association with level of social disadvantage.

Overall those who reported excellent or very good health were more likely to have attended dental services in the previous year, than those who reported that they thought that they had poor health. The trend in attendance ratio over the categories of self-assessment of health was significant. In addition, as shown in Figure 3, the attendance ratios differed markedly between those from most and least disadvantaged areas for every level of self-assessment of health.

There was no significant difference in attendance ratios between the respondents who had ongoing arthritis and those who did not have arthritis. However, further investigation showed significant differences in attendance ratios for males overall (P = 0.048), for males in the age group of 65-69 years (P = 0.04) and the female age group of 80+ years. In each of these groups the presence of arthritis increased the attendance ratio.

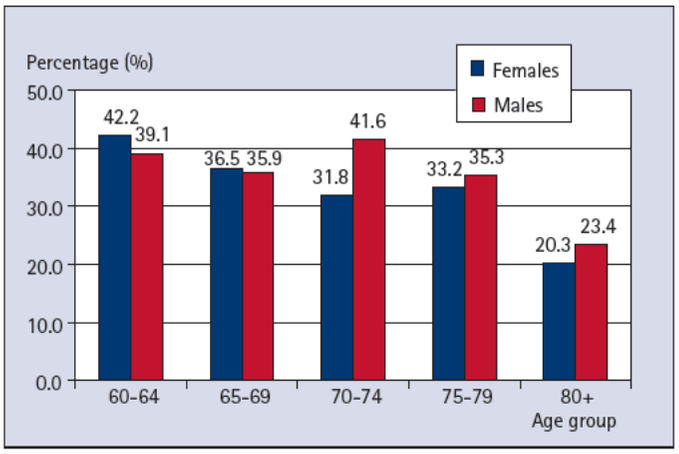

Fig. 1 Percentage of respondents within each age group who reported that they had seen a dentist or dental professional in the previous year (weighted data)

Table1 Distribution of the number and percentage of respondents who had consulted a dentist or dental professional within the previous year by selected demographic variables (*P*-value for difference or trend) (weighted values)

	Number not attending	Number attending	Per cent attending
Total	1,850,322	984,876	34.7
Sex (*t*-test, $P = 0.0118$)			
Males	813,603	462,884	36.3
Females	1,036,720	521,993	33.5
Age (trend test, $P = 0.0451$)			
60–64	415,856	282,286	40.4
65–69	439,156	247,701	36.1
70–74	420,085	232,939	35.7
75–79	276,622	141,754	33.9
80+	298,603	80,196	21.2
Education (age first left school) (trend test $P = 0.0027$)			
18+ years	29,843	7,488	53.3
15–17 years	1,015,223	391,107	40.9
Under 15 years	739,503	511,267	27.8
No schooling	65,753	75,014	20.1
Ethnicity (Usual language at home) (*t*-test, English versus other, $P = 0.8437$)			
North European	14,093	11,519	45.0
E Asian	7,750	5,380	41.0
SE Asian	7,495	4,342	36.7
Eastern European	39,580	21,713	35.4
English	1,674,100	889,696	34.7
South European	91,186	47,442	34.2
All others	16,118	4,785	22.9
Wealth (Equivalent income decile) (trend test, $P = 0.0001$)			
10th (Highest income)	80,090	41,926	60.2
9th	332,360	107,399	52.2
8th	402,418	151,126	46.6
7th	319,794	155,499	43.9
6th	160,394	83,242	44.1
5th	84,764	66,887	34.2
4th	65,977	51,581	32.7
3rd	51,626	44,962	27.3
2nd	32,421	35,416	24.4
1st (Lowest income)	40,383	61,123	34.4
Location level of disadvantage (SEIFA quintile) (trend test, $P = 0.0339$)			
Least disadvantaged	268,943	265,850	49.7
Less disadvantaged	356,968	196,194	35.5
Mid disadvantaged	326,957	177,147	35.1
More disadvantaged	456,547	174,588	27.7
Most disadvantaged	436,269	169,649	28.0
Other adult in the household (*t*-test, $P < 0.0001$)			
Yes	1,282,978	729,105	36.2
No	567,344	255,771	31.1

Use of pain relief for dental problems

The results showed a significant difference in attendance at dental services between those who had taken pain relief for dental problems: 82% had attended the dentist or dental professional in the previous year, compared with 35% of those who had not taken any pain relief for dental problems. Any conclusions regarding pain relief should be tempered by the low numbers of respondents taking such medication.

MULTIVARIABLE ANALYSIS

The results from the logistic regression model are shown in Table 3 for males and Table 4 for females. Each variable is listed from lowest attendance to highest attendance and the odds ratio shows the odds of attending dental services between any one level and the lowest level.

Males

There were no significant interaction terms for males. Age, years of school, SEIFA index, exercise level, possession of a health concession card and smoking status were all significantly associated with a recent dental visit after adjustment for all other factors and interactions.

Females

For females, age, years of school, exercise level and smoking status were all significantly associated with a recent dental visit after adjustment for all other factors and interactions. While possession of a health concession card was the most significant factor to be introduced into the stepwise regression, that main effect was removed by the later introduction of a significant interaction between possession of a health card and locational disadvantage at the level of $P = 0.0320$. The only significant individual interaction was between respondents from the two most socially disadvantaged areas, ie there was a significant increase in attendance between those with and without a health concession card between those from the most to the less disadvantaged areas.

DISCUSSION

This study has afforded an opportunity to investigate factors associated with dental visits in a population-based sample of the aged. The strength of this study includes the population-based nature of the data and consequent large number of respondents, even when limited to those, 60 years and over. The dataset considered here was a sample of non-institutionalised aged (hospitals, nursing and convalescent homes were excluded) with only those who did not know if they had visited a dentist being excluded.[17] The data has extensive demographic and health behaviour information available for each respondent. The use of dental visit questions in such a National Health Survey was extremely useful. However, the study is also limited by the use of a national health survey where the authors cannot select the variables for which data was collected. The data also does not include any form of dental examination (although that would be of very high cost at population level). A number of salient points have emerged from this work. There

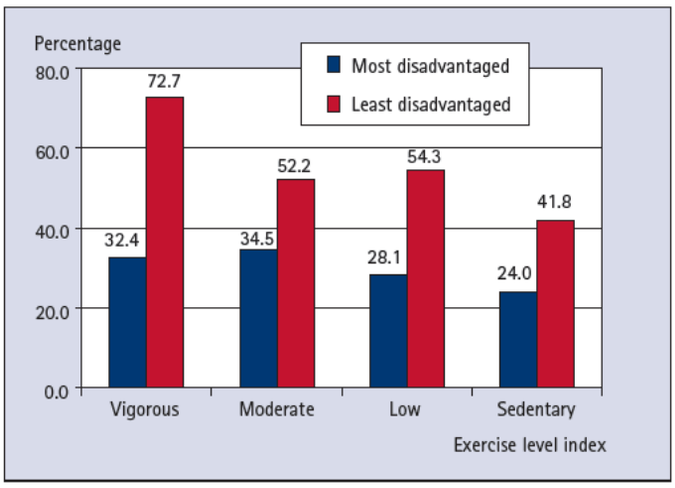

Fig. 2 Percentage of respondents who reported that they had seen a dentist or dental professional in the previous year by level of exercise and level of social disadvantage (weighted data)

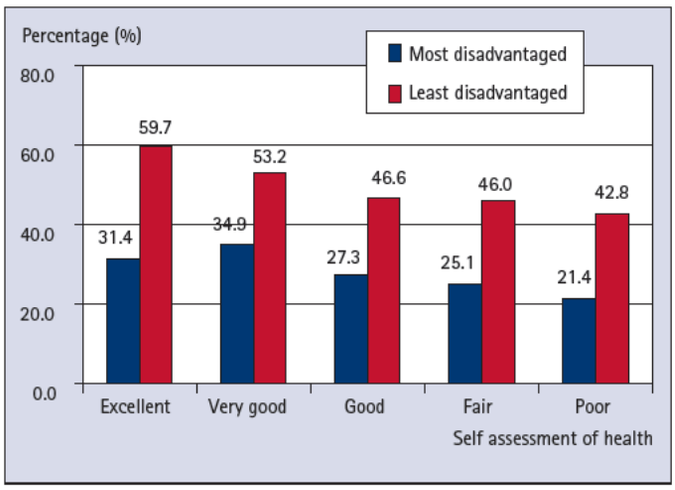

Fig. 3 Percentage of respondents within each level of social disadvantage and level of self-assessed health who reported that they had seen a dentist or dental professional in the previous year. (weighted data)

was a clear relationship between the percentage of respondents attending dental services in the previous year and their reported level of social disadvantage and equivalent income deciles. The availability of subsidised treatment for some of those on a pension was not sufficient financial support to influence the level of attendance at dental services, with those people on a pension attending dental services less than those not on a pension. Those with private ancillary health insurance were more likely to have attended dental services in the previous year than those with no insurance. Possession of a health concession card reduced the percentage attending dental services. There was a strong positive relationship between years of schooling and attendance at dental services.

In this population-based study, men in this age cohort were more likely than women to have attended dental services in the previous year. This differs from some other studies, for example Manski found little difference in dental visits by gender after excluding those that were edentate.[9] However, others point out that there is dental need in all aged, regardless of dentate status.[8] Both the males and the females were more likely to have attended a dental service in the previous year if they had another adult living in the household.

Those who reported excellent or very good health were more likely to have attended dental services than those who report their health as poor. Those who currently smoked were significantly less likely to have attended dental services in the previous year than those who were ex-smokers or did not smoke. Those undertaking vigorous exercise were more likely to have attended dental services in the previous year than those who were sedentary. It was

Table 2 Distribution of the number and percentage of respondents who had consulted a dentist or dental professional within the previous year for health insurance, health promotion and personal health related factors (weighted values)

	Number not attending	Number attending	Per cent attending
Health Insurance:			
Private health insurance (*t*-test, ancillary versus other, $P < 0.0001$)			
Ancillary only	9,322	12,202	56.7
Hospital cover with ancillary	195,651	200,674	50.6
Hospital cover only	117,984	64,184	35.2
None	593,206	220,977	27.1
Health concession card (*t*-test, $P < 0.0001$)			
No card	306,704	293,157	48.9
DSS or DVA card	1,539,593	690,722	31.0
Health promotion:			
Smoking status (trend test, $P = 0.5660$)			
Ex-smoker	672,345	394,779	37.0
Never smoked	900,512	497,616	35.6
Current smoker	277,465	92,481	25.0
Exercise level index (trend test, $P = 0.0397$)			
Vigorous	28,054	25,675	47.8
Moderate	429,676	295,595	40.8
Low	532,540	326,862	38.0
Sedentary	860,052	336,744	28.1
Personal health:			
Self-assessment of health (trend test, $P = 0.0085$)			
Excellent	188,893	121,089	39.1
Very good	411,152	264,035	39.1
Good	571,177	313,589	35.4
Fair	461,004	206,157	30.9
Poor	218,096	80,007	26.8
Presence of arthritis (*t*-test, $P = 0.8942$)			
Yes	758,017	404,771	34.8
No	1,092,305	580,105	34.7
Use of pain relief for dental pain (*t*-test, $P < 0.0001$)			
Yes	1,035	4,767	76.5
No	1,849,288	980,109	35.3

Table 3 Results of the logistic regression for males

Males	OR	Lower CI	Upper CI	*P*
Age				<0.0001
80+	1.00			
75–79	1.81	1.33	2.49	
70–74	2.22	1.67	2.96	
65–69	1.70	1.28	2.26	
60–64	1.66	1.24	2.24	
Years at school				<0.0001
No schooling	1.00			
Under 15 years	0.74	0.34	1.62	
15–17 years	1.12	0.51	2.54	
18+ years	1.50	0.67	3.52	
Locational disadvantage				<0.0001
Most disadvantaged	1.00			
More disadvantaged	0.84	0.67	1.06	
Mid disadvantaged	1.03	0.81	1.30	
Less disadvantaged	1.07	0.85	1.35	
Least disadvantaged	1.66	1.32	2.08	
Exercise				<0.0001
Sedentary	1.00			
Low	1.34	1.12	1.61	
Moderate	1.43	1.20	1.70	
Vigorous	2.16	1.38	3.38	
Health concession card				
Has a card	1.00			
No card	1.33	1.10	1.60	0.0018
Smoking status				
Current smoker	1.00			
Not a current smoker	1.77	1.43	2.18	<0.0001

Using normalised weights and Wald 95% confidence intervals for adjusted odds ratios

potentially concerning that those who took medication for dental pain were less likely to have visited a dentist if they lived in lower socio-economic areas.

The primary conclusion of this analysis is that attendance at dental services is associated with age, years of schooling and the availability of resources to pay for treatment. Oral health promotion activities could be directed to current smokers who have a low attendance profile.

Analysis of the level of social disadvantage and dental visits using the SEIFA Index of relative socio-economic disadvantage determined in quintiles, uptake of private health insurance and the possession of a health card indicated a lack of equity of use which indicated that not enough was being done to ensure all Australians use appropriate dental services. However, the relationship between access and use may not be straightforward. Those with access to appropriate services still may not use these services. It is also important to note that SEIFA is based on the local area measure rather than the individual level and interpretation as an individual measure may risk ecological fallacy, although the value of area based social contexts has also been recognised.[23] The role of area factors versus individual factors in the use of dental services warrants further investigation, for example those living in an area with higher average income may have a different use of dental services than those in a poorer area even when individual factors are accounted for. Given that there was additional federal funding for dental services for disadvantaged adults in Australia from 1994 to 1996, the impact of disadvantage on dental visits may have been reduced during this time increasing the importance of these findings.[13]

This study demonstrates very clear trends in the use of dental services in those aged 60 years and over. These need to be addressed by ensuring access to services for the more disadvantaged elderly. In addition, resources allocated to increasing prevention in earlier years will assist in reducing the growing burden on dental services in the aged.

In memory of Dr Jilda Hyndman, a gifted epidemiologist and valued colleague.

The authors would like to thank David Lawrence and Max Bulsara for advice on statistics and the use of the National Health Survey data. The Australian Bureau of Statistics supplied the data but they are not responsible for the analysis. The research was funded by the Cottesloe Bequest through The Faculty of Medicine and Dentistry, The University of Western Australia.

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Table 4 Results of the logistic regression for females

Females	OR	Lower CI	Upper CI	*P*
Age				<0.0001
80+	1.00			
75-79	1.91	1.47	2.50	
70-74	1.80	1.41	2.31	
65-69	2.01	1.57	2.58	
60-64	2.30	1.80	2.96	
Years at school				<0.0001
No schooling	1.00			
Under 15 years	2.03	1.01	4.09	
15–17 years	2.90	1.44	5.85	
18+ years	5.32	2.45	11.55	
Exercise				<0.0001
Sedentary	1.00			
Low	1.40	1.19	1.64	
Moderate	1.54	1.29	1.84	
Vigorous	1.36	0.76	2.45	
Smoking status				
Current smoker	1.00			
Not a current smoker	1.51	1.18	1.92	0.0013
Concession card interaction with SEIFA				0.0311

Using normalised weights and Wald 95% confidence intervals for adjusted odds ratios

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