Australasian Medical Journal [AMJ 2011, 4, 12, 683-691]

'You get the quickest and the cheapest stuff you can': Food security issues among low-income earners living with diabetes

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RESEARCH

Please cite this paper as: Cuesta-Briand B, Saggers S, McManus A. 'You get the quickest and the cheapest stuff you can': Food security issues among low-income earners living with diabetes. AMJ 2011, 4, 12, 683-691. http//dx.doi.org/10.4066/AMJ.2011.1104

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Abstract

Background

Diabetes prevalence is increasing worldwide. More than 800,000 Australians live with diabetes, and there are stark inequities in prevalence and clinical outcomes among Indigenous people and low socio-economic groups.

Aims

This paper focuses on food security issues experienced by low-income earners living with type 2 diabetes in Perth, Western Australia. The results presented here are part of a broader qualitative study exploring the impact of socio-economic disadvantage on diabetes.

Method

Data was collected through focus groups and semi-structured interviews conducted from October 2008 to November 2009. The sample, comprising 38 participants (Indigenous and non-Indigenous), was recruited from areas with high indices of socio-economic disadvantage in Perth. Deductive data analysis identified categories from an existing conceptual framework for the relationship between socio-economic position and diabetes health outcomes, while an inductive approach was adopted to identify new themes.

Results

Participants had a good understanding of their dietary requirements. However, access to healthy food was not always realised, as many participants depended on others for food provision and meal preparation and had little control over their diets. Furthermore, the majority struggled to accommodate the price of healthy food within a limited budget.

Conclusion

In this study, low-income earners living with diabetes faced food security issues. Participants reported cost barriers, but also physical barriers relating to functional limitations and lack of transport. This study highlights that the socio-economic circumstances in which vulnerable populations experience their disease need to be understood and addressed in order to reduce the inequities surrounding diabetes outcomes.

Key Words

Diabetes; food security; access; disadvantage; low income; Indigenous health

What this study adds:

1. Socio-economic disadvantage impacts on diabetes self-management.

2. Low-income earners living with diabetes face food security issues relating to economic and physical access to healthy food.

3. This study highlights the importance of addressing the socio-economic circumstances in which vulnerable populations living with diabetes experience their disease self-management.

Background

Type 2 diabetes (T2D) is a disease marked by high glucose levels resulting from the body's ineffective use of insulin. It is the most common type of diabetes – experienced by 90% of people with diabetes worldwide – and it affects mostly people 50 years or over, although it is increasingly being diagnosed in children and young people.[1,2] Following a worldwide trend,[3] the prevalence of diabetes is increasing in

Australia: an estimated 818,200 Australians, or 4% of the population, had been diagnosed with diabetes in 2007–08;[4] this represents three times the proportion of 1989–90.[2] Furthermore, the burden of disease of T2D is not equally distributed: there are stark inequalities in diabetes occurrence and clinical outcomes among Indigenous people,[2,5] and people in low socio-economic groups, immigrant communities, and people living in remote and very remote areas are also more susceptible to developing diabetes and having poorer clinical outcomes than the general population.[2, 6]

Diabetes management involves dietary changes, exercise, glucose-lowering drugs, insulin injections, or a combination of these.[1,2] Maintaining a healthy diet is one of the cornerstones of diabetes self-care,[7] and the recommendations on nutritional management for T2D include having one high-fibre, low glycaemic index carbohydrate food at each meal, reducing the intake of fat, and eliminating the intake of saturated fat.[8] In Australia, the availability and affordability of basic healthy food decreases with increased remoteness,[9] and the lower cost of energy-dense, nutrient-poor food influences the capacity of Indigenous people living in remote communities to achieve good health.[10] In urban areas, although there are no significant differences in the availability, quality and prices of healthy foods between high- and low-income areas,[11] research has highlighted the issue of relative affordability, as people in lower socio-economic groups are spending a much greater proportion of their income on healthy food than those in higher socio-economic groups.[12,13] Furthermore, people living in disadvantaged areas face physical barriers relating to poor access to transport and they are more likely to be affected by mobility issues or other functional limitations such as the inability to lift groceries.[14,15] Food affordability has been identified as a barrier to adopting a healthier diet among vulnerable populations living with T2D, both in Australia[16-18] and overseas.[19, 20] This paper explores food security issues faced by low-income earners living with T2D as part of a broader investigation of the impact of socio-economic disadvantage on the experience of diabetes.

Method

The study adopted a qualitative methodology. This approach was congruent with the theoretical underpinnings of the study,[21] and was consistent with research exploring lay experiences of T2D.[22-24] Data collection adopted a two-stage design, with focus groups followed by in-depth interviews. Demographic data and diabetes-related information were obtained from all participants through a brief background questionnaire.

Two focus groups were held in October 2008: the first session involved Indigenous participants and was held at a community-controlled Indigenous health clinic; the second session primarily targeted non-Indigenous participants and was held at a local community centre. Participants were invited to discuss all aspects of their experience of disease around the following broad topics: self-management; medical care; barriers to effective self-management; personal, family, social and financial impact of diabetes; and priorities for more effective support.

The themes elicited from the focus groups informed the development of the interview schedule, which adopted a semi-structured format to capitalise on the richness of participants' responses, while ensuring a comprehensive understanding of the topic.[29] A total of 23 in-depth interviews – including seven sessions with two participants and 16 individual sessions – were conducted between March and November 2009. The interviews with most Indigenous participants were conducted at the clinic, whilst the remainder were conducted at the participant's home. The duration of the interviews was not predetermined and varied between 20 minutes and two hours.

The study sample was recruited from the suburbs covered by the postcode with the highest Index of Relative Socio-economic Disadvantage in the Perth metropolitan area.[30] People aged 18 years or over, diagnosed with T2D for at least one year, and living in the sampling area were invited to take part in the study. Indigenous participants were largely recruited among clients of the community-controlled Indigenous health clinic, whilst the remainder of the sample was recruited through advertisements in community newspapers. Informed consent was obtained prior to data collection, and participants received AUD$30 in compensation for their time and contribution to the study.

Sessions were audio-taped and transcribed verbatim, and the resulting transcripts were imported into *NVivo8*.[31] Deductive data analysis aimed to identify conceptual categories derived from a conceptual framework on the relation between socio-economic position and diabetes health outcomes by Brown and colleagues,[32] while an inductive approach was adopted to identify new categories.

All direct quotations included in this paper are italicised and contextualised by the use of a pseudonym followed by an indication of participant's age, diabetes management regimen, and duration of diagnosis.

Results

Sample

A total of 38 participants took part in the study. The sample size achieved was consistent with other qualitative studies on lay experiences of diabetes,[23, 29-32] and was large enough to reach data saturation – the point when no new themes emerged[33] – and to reflect the diversity in terms of disadvantage within the population targeted.

Table 1: Selected socio-demographic data on study participants (n=38)

Characteristic		**Participants (n)**
Age (years)*	25–34	1
	35–44	1
	45–54	7
	55–64	9
	65–74	12
	75+	7
Sex	Female	28
	Male	10
Indigenous status	Indigenous	18
	Non-Indigenous	20
Country of birth	Australia	29
	Other†	9
Partner/spouse*	Yes	19
	No	18
Educational attainment*	Year 8	7
	Year 9	4
	Year 10	8
	Year 11	2
	Year 12	5
	TAFE^	7
	University Degree	2
Weekly household income*	$1-$199	12
	$200-$399	12
	$400-$599	7
	$600-$799	4

* Data not available for all participants; † Burma (n=1), India (n=3), Slovenia (n=1), The Netherlands (n=1); UK (n=2); US (n=1); ^ Technical And Further Education.

As shown in Table 1, the age distribution of the sample was consistent with the general distribution of disease of diabetes in Australia.[2] Male participants were not as well represented as females (n=10 and n=28 respectively), which does not reflect the higher prevalence of diabetes among males.[2] In this study, the skewed sex representation was due to the disproportionate number of Indigenous female participants; whilst in the non-Indigenous subsample (n=20), the representation of males and females was almost equal (n=9 and n=11 respectively), among the Indigenous subsample (n=18) only one participant was male.

The majority of participants (n=29) were born in Australia. The high number of Australian-born participants is a reflection of the large Indigenous subsample; when considering the non-Indigenous subsample alone (n=20), the representation from Australian- and overseas-born participants was almost equal (n=11 and n=9 respectively), which is consistent with the socio-demographic profile of the main sampling area.

The levels of educational attainment reported by participants varied, but were generally low. Income levels reported by participants were very low, with the majority (n=24) reporting that their weekly household income was in the two lowest income brackets, which is consistent with most participants' reports of their source of income: age or disability pensions, or unemployment benefits.

Table 2 provides an overview of diabetes-related information on study participants for whom data was available (n=35). The majority of participants (n=23) reported having been diagnosed for 10 years or less, and only two reported having had diabetes for more than 20 years. The majority of participants (n=22) reported being on an oral hypoglycaemic tablet regimen, 11 were on insulin, and two participants managed their diabetes through a diet-only regimen.

Table 2: Selected diabetes-related data on study participants (n=35)

Characteristic		**Participants (n)**
Diagnosis (years)	1–5	11
	6–10	12
	11–15	3
	16–20	7
	21+	2
Diabetes regimen	Insulin only	3
	Insulin & diabetes	8
	1 diabetes medication	11
	2+ diabetes medications	11
	No diabetes medication	2

Food security issues

Participants viewed having a 'healthy diet' – which they also referred to as 'the correct food' or 'the right food' – as an essential part of their self-management. In participants' narratives, having a 'healthy diet' involved cutting back on sugars and fatty foods, and increasing the consumption of fruit and vegetables. Drinking water was identified as a healthy habit, whilst low-sugar soft drinks were identified as a healthier alternative to regular soft drinks. Participants also identified a number of 'healthy' cooking techniques which included using little or no oil or margarine, and steaming and poaching. In contrast, deep frying was widely identified as an unhealthy cooking practice.

Despite participants' knowledge of the dietary requirements of a person with diabetes, access to healthy food was not always realised. Two major themes arose around food access issues: dependence on others for food provision and meal preparation, and accommodating the cost of food within a tight budget.

Dependence on others for food provision and meal preparation

Indigenous participants were more likely than non-Indigenous participants to report depending on relatives or others around them for food shopping and meal preparation. The majority of clients of the Indigenous health clinic reported relying on close family members for food provision, as they did not have a car or a driving licence and they had mobility issues that prevented them from walking to the local shops or using public transport to access supermarkets. Many spoke of seldom leaving their home unless they were driven somewhere by either a family member or clinic staff. Frances, who reported very poor glycaemic control, provided an account of her shopping routine which is representative of that of other Indigenous participants:

> *Well, I've got to wait until five o'clock when [my daughter] gets home, and then we go shopping. […] Our main days we go on Saturdays and Thursday night. […] 'Cause otherwise I've got to wait until she comes home. If I've got nothing to eat I still have to wait until she comes home; I can't walk up the shops.*
> [Frances; 70s; tablets; diagnosed 40 years]

Similarly, Gail provided an account which revealed the network of people she relied on for food provision:

> *Somebody always takes us, if it's not [Indigenous clinic], uh… I've got nieces [...] yeah, and I've got a grandson, I've got a daughter, and I've got a good, a very good son-in-law. I'm very lucky.*
> [Gail; 70s; insulin; diagnosed 20 years]

At the extreme end of dependence were those participants who reported not cooking for themselves, and whose meals were provided by either family members or by welfare agencies. Of the 11 Indigenous women interviewed at the clinic, five reported that they did not do their own cooking, and their narratives suggested that some were not having meals which met their dietary needs. For example, Lyn, who is visually impaired and looked very frail at the time of the interview, explained that she was unable to cook because she had lost the use of her hands. When talking about her meals, Lyn commented:

> *Well, my daughter looks after me, and she gives them [meals] to me every now and again when I feel like eating. But I eat… I eat when I feel like eating, because one time I went off my food; in fact, I'm too skinny now, I'm just a bag of bones almost [chuckles].*
> [Lyn; 80s; tablets; no data available on duration of diagnosis]

Later, Lyn added: *I like fish, but she [my daughter] won't buy it for me*. Similarly, Rachael, who has two grandsons living with her, was unable to cook because she had lost the use of her right arm following a stroke. Rachael, who reported struggling with her weight, talked about her diet:

> *The kids bring take-aways. I just can't say no, it's horrible. I just can't control it. […] I just couldn't go on a diet. I mean, my grandson cooks eggs and bacon when he's hungry, and I end up eating it, which I shouldn't, I know, but… I just can't control myself.*
> [Rachael; 60s; insulin; diagnosed 20 years]

Rachael's comment conveys a sense of powerlessness, made more acute by her realisation that she is eating the wrong food. Later in the interview, Rachael explained: *My grandson cooks meals, or my daughter-in-law, so they cook it overnight and then warm it up*. When asked if they cooked differently to accommodate her dietary needs, Rachael tentatively, but unconvincingly, responded: *Yeah, sometimes, yeah…*

Several participants reported having accessed *Meals on Wheels*[1] in the past, and they raised the issue of its high cost as a barrier to access. Rhonda and Jim, a couple who were interviewed together, talked about accessing this service and they disclosed that they had an outstanding bill with the organisation delivering the meals:

> Jim: *while Rhonda was in hospital, I had to access Meals on Wheels, uh… which was very good. They were… at least I had one decent meal a day. Uh… we tried to continue on…*
>
> Rhonda: *it was too expensive.*
>
> Jim: *… but it got too expensive for two people. […] Based on eight dollars per hit, daily…*
>
> Rhonda*: three days a week… and it got to be expensive. We've got to pay that bill now, 'cause they won't give it to us now until we pay it back.*

At the beginning of the interview, Rhonda and Jim said very little about their diet; even when prompted on specific

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[1] Government-subsidised programme delivering meals to frail aged and disabled people living in the community.

details, both remained guarded. As the interview unfolded and they became more comfortable, they disclosed that for the last five months they had been accessing a food bank fortnightly. Neither Jim nor Rhonda were very confident speakers during the interview; despite this, they were both keen to discuss the lack of awareness of the recommended diet for a person living with diabetes amongst community agencies. Their account provides an insight into their lack of choices and control over their diet:

> Jim: *a lot of welfare agencies are not aware of the needs for diabetic food.*
>
> Rhonda: *that's… that's something.*
>
> Interviewer: *so what happens is that they don't have what you need?*
>
> Rhonda: *they have things that are not for diabetics. […]*
>
> Jim: *no, it's not the proper diabetic diet.*
>
> Interviewer: *is that food banks and places where you can…?*
>
> Jim: *yeah, food banks.*
>
> Rhonda: *sometimes they put sausage rolls and pies in and…*
>
> Interviewer: *alright.*
>
> Jim: *… pastries… that sort of…*
>
> Rhonda: *that's something we don't do…*
> [Rhonda; 60s; tablets; diagnosed three years. Jim; 60s; tablets; diagnosed eight years]

Accommodating the cost of food within a tight budget

Another factor influencing dietary patterns was the cost of food. The perceived high cost of fruit and vegetables and diabetes-friendly products led participants to make decisions about which foodstuffs to purchase, and thus influenced their ability to adhere to the recommended diet. As Nicole, a participant who took part in the Indigenous focus group, reflected:

> *Mind you I'm not really motivated to eating a healthy diet… because it doesn't really go into my budget.*
> [Nicole; 50s; tablets; diagnosed 10 years]

Most participants perceived fruit and vegetables as very expensive, and they also identified meat as expensive. Liz's account encapsulated most participants' experiences:

> *I try and eat more vegetables than meat, and I try and have fish as much as possible, mainly because realistically I can't afford the meat these days. If I have mince and I'm making a potato pie or something, I'll cook it up, I'll boil it up first, I mean, it doesn't smell very nice, but you boil it up first and then I put it in the sieve and run hot water through it to get all the fat and everything out, and that tends to help. Plus it gets all the preservatives out … because it affects some people – it doesn't worry me.*

Later, Liz added:

> *Fruit and veggies are difficult, because they are expensive, and the cheaper ones are normally… just about in a stage to put them in the bin, so that makes it a little bit difficult.*
> [Liz; 60s; tablets; diagnosed four years]

Liz's observation of the poor quality of the cheaper produce she is able to afford was echoed by other participants, including Marko, a participant in his 70s who reported having been diagnosed with depression and whose account revealed high levels of stress. Marko reflected on the high price of fish and revealed his perception that more affordable fish imported from Asian countries is of a lesser quality and *you can't eat it*.

Participants also commonly reported that diabetes-friendly products such as low-sugar jams, low-fat margarines or wholemeal breads were more expensive than their less healthy counterparts. Leah and Diane, both young mothers, discussed the impact of the cost of healthy food on their family budget:

> Leah: *yeah, you know that … the butter with the low cholesterol, all that is just a couple of dollars extra.*
>
> Diane: *yeah, I've noticed the margarine, you know… just the normal margarine… it's like you go from getting the cheapest for one to two or three dollars to getting the one… at maybe six dollars, and you sort of look at it and you go… I mean even bread now, because I've changed breads from… and I'm like, all right, I'll give it a try. You go from being able to get like a one-dollar-thirty-bread to two dollars something, three dollars for bread, you're like… [laughs for emphasis]… you can't*

> *always, you can't always do it. 'Cause, I mean, on my… what I get for me and the kids, because [the children's father] is not always there, it goes towards, you know, the bills and everything like that, and what you've got left is what you've got to do the shopping with. And, like, I mean my daughter is still in nappies, so you buy nappies. It makes it harder to… usually you go around and you do the huge, quick… you get the quickest and the cheapest stuff you can, and that's not always the best stuff for the people who're going to be eating.*
> [Leah; 30s; tablets; diagnosed eight years. Diane; 20s; tablets; diagnosed one year]

Diane's comments highlight the dilemma faced by many participants: choosing between the healthier, more expensive option and the less healthy, more affordable one. Whilst some participants reported making an effort to buy the healthier option or not buying the food item at all if it was outside their price range, others admitted to buying the cheaper alternative, as Diane hinted at in her comment. Similarly, Tony, who lives with his son and who reported doing very little cooking, commented:

> *I want to buy the diet jam, but it's twice as dear as the normal jam. Everything that is… that I'm supposed to… it's got a Heart Tick[2] on it and it's good for diabetes is dear. You know, you think, well, you know, you're on a bit of a budget so I'll just, you know, skip that; I'll buy the marmalade that I shouldn't have, because it's cheaper, you know.*
> [Tony; 50s; tablets; diagnosed 10 years]

Participants' perception of the high cost of food in general and of diabetes-friendly food in particular needs to be understood in the context of their limited incomes, as Diane's and Tony's comments illustrated. References to the reduced shopping budget imposed by a restricted income were common among participants. Cecil, who was interviewed with his wife, touched on this issue as he talked about their shopping habits:

> *Because we've been on pensions, we just go and get the cheapest of the cheapest that we can.*
> [Cecil; 50s; insulin; diagnosed five years]

Similarly, Gail and Joan, two Indigenous participants who were interviewed together, commented:

> Gail: *you've got to have your fresh fruit.*
>
> Joan: *yeah, you've got to have fresh fruit. Time I pay all my bills… I have all my bills taken out of my pension; I've got twenty dollars left…*
> [Gail; 70s; insulin; diagnosed 20 years. Joan, 70s; tablets; diagnosed five years]

Summing up participants' experiences, Alison reflected on the challenges faced by those living on restricted incomes:

> *To purchase the healthier foods, whether you're diabetic or not, if you're on a low fixed income, it's very expensive, you know, I… at times sort of wonder if… you know, the powers that be, actually realise this, you know.*
> [Alison; 50s; tablets; diagnosed nine years]

Participants spoke of the coping strategies they implemented to mitigate the affordability barriers they faced. Whilst some reported relying on food provided by relatives to supplement their shopping, others reported strategies such as buying in bulk, buying items only when on special, eating seasonally, and freezing food; for example, Alison explained:

> *I buy a lot of things in bulk, and I always go to a farmers' market, and I buy in bulk, and I cook a lot, and I freeze a lot of stuff. What I have to do is, I have to eat, because of financial restrictions, I have to eat what's in season, so, you know, if this week it's… if cauliflower is on special this week, we eat a lot of cauliflower, and if next week it's sweet corn, or peas, or whatever, that's what we eat.*
> [Alison; 50s; tablets; diagnosed nine years]

These strategies demonstrate a set of organisational and practical skills, which can also be seen in Liz's account of her shopping routine:

> *Because we just rely on the pension, it's all we've got, uh… I get the brochures out and because they're in the one shopping centre you can go from one to another. So I just get it out and write a list, and that's cheaper to buy it there, or something like that. And sometimes if there's things on special, like, you know, you buy two for the price of something… a neighbour, you know, I've got a friend down the road, you know, we'll share it, sort of thing. So, you know, instead of paying the ten dollars for the two, we pay five dollars*

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[2] Tick of approval of the Heart Foundation of Australia which is displayed on packaging and represents a healthier choice within a food category.

> *each.*
> [Liz; 60s; tablets; diagnosed four years]

Liz's comment demonstrates her budgeting skills and highlights the role played by her informal networks in mitigating some of the financial constraints she and her husband face.

Discussion

Participants in this study generally demonstrated a good understanding of their dietary requirements, but could not always translate this knowledge to their everyday lives. There was evidence of food insecurity, and participants reported that accessibility and affordability issues had a strong influence on their dietary patterns.

In contrast with US data[23] but consistent with Australian research conducted in Brisbane[37] and Adelaide,[17] participants in this study did not report issues of availability of healthy food. However, affordability issues were commonly reported. This finding needs to be understood in the context of the rising cost of healthy food in Australia,[38] which disproportionally affects low-income households,[15-17] as was the case with participants in this study. The high cost of food was commonly reported as a barrier to healthy eating, confirming findings from other research conducted among Indigenous people living with diabetes,[20] women living in low socio-economic areas,[29] and people affected by chronic illnesses including diabetes.[21] Consistent with other Australian research,[18] participants' low incomes limited their range of food choices; participants reported making purchase decisions based on cost and sometimes having to opt for more affordable, less healthy alternatives, lending support to Brimblecombe and O'Dea's view that 'low income is a powerful driver of food choice'.[14, p.550]

Accessibility barriers relating to transport and mobility issues were also reported. Several participants reported relying on informal networks for transport to shopping centres as they did not have access to a car or public transport. This finding confirms results from research conducted among vulnerable populations in Victoria,[18, 39] and supports research suggesting that people living in low socio-economic areas might be more susceptible to physical barriers to healthy food.[39] Consistent with findings from Radermacher and colleagues,[18] physical barriers to healthy food were compounded by participants' poor health status, as many participants had mobility impairments, and several had lost the ability to cook following health issues such as strokes.

These compounding circumstances led to some participants reporting significant dependence on family members and welfare agencies for meal provision, thus having very limited, if any, control over their food choices. This finding lends support to findings from Abbott and colleagues,[20] and highlights the limitation of regarding eating as a behaviour under the control of an individual, a view which underestimates the circumstances in which food and eating are embedded.[40]

Overall, participants reported that living on low incomes led them to make everyday choices in the context of their limited resources, supporting Jeon and colleagues' finding that economic hardship compromises people's healthy lifestyle choices.[21] However, the restrictions imposed by their limited incomes were mitigated by the support provided by informal community networks, confirming findings from research conducted among older Australians.[18]

Time and feasibility constraints limited the study to one metropolitan area in Perth, although the diversity of the sample allowed for the exploration of how the findings might apply to other urban settings. In addition, time and financial considerations prevented the recruitment of participants among the Vietnamese community – the largest culturally and linguistically diverse group in the sampling area; thus, the ethnic diversity of the sample does not represent the diversity of the sampling area. Limitations to the validity of the data are also recognised. The data collected through the background questionnaire was self-reported, and its validity relied on participants providing complete and accurate answers; in addition, recall bias cannot be excluded. The validity of the data relating to the time of diagnosis needs to be considered, as some participants could not recall the time of their diagnosis and provided an approximate estimation. Finally, it cannot be discarded that participants might have been motivated by the monetary incentive offered; however, this does not necessarily preclude valid responses.

Conclusion

Living on low incomes coloured participants' experience of diabetes, and reportedly compromised their ability to achieve and sustain a healthy diet as part of their self-management. In particular, participants faced food security issues relating to affordability, lack of adequate transport, and mobility and other health-related issues. The inequity of the affordability of healthy food by the poorest in Australia should be a major public health concern.[41] In the current economic climate, with ever-increasing living costs, if the inequities surrounding the occurrence and outcomes of T2D in Australia are to be eliminated, the food security issues faced by vulnerable populations, especially Indigenous Australians, must be investigated and addressed.

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ACKNOWLEDGEMENTS

The authors wish to acknowledge the support of Diabetes WA's Aboriginal Health team. The authors also acknowledge and thank all study participants.

PEER REVIEW

Not commissioned. Externally peer reviewed.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

FUNDING

This study was part of a doctoral thesis funded through Australian Postgraduate Award and Curtin Research scholarships.

ETHICS COMMITTEE APPROVAL

Curtin University's Human Research Ethics Committee. Approval reference number: HR 95/2008.