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The Australian Nurse-Family Partnership Program for aboriginal mothers and babies: Describing client complexity and implications for program delivery

Dorota Zarnowiecki, PhD^a, Ha Nguyen, PhD^a, Catherine Hampton^b, John Boffa, MBBS MPH^c, Leonie Segal, PhD^{a,*}

^a Health Economics and Social Policy Research Group, Centre for Population Health, School of Health Sciences, University of South Australia, GPO Box 2471, Adelaide, SA 5001, Australia

^b Australian Nurse-Family Partnership Program, Central Australian Aboriginal Congress Aboriginal Corporation, Australia

^c Central Australian Aboriginal Congress Aboriginal Corporation, Australia

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ABSTRACT

Context: The Australian Nurse-Family Partnership Program is a home visiting program for Aboriginal mothers and infants (pregnancy to child's second birthday) adapted from the US Nurse Family Partnership program. It aims to improve outcomes for Australian Aboriginal mothers and babies, and disrupt intergenerational cycles of poor health and social and economic disadvantage. The aim of this study was to describe the complexity of Program clients in the Central Australian family partnership program, understand how client complexity affects program delivery and the implications for desirable program modification.

Methods: Australian Nurse-Family Partnership Program data collected using standardised data forms by nurses during pregnancy home visits ($n = 276$ clients from 2009 to 2015) were used to describe client complexity and adversity in relation to demographic and economic characteristics, mental health and personal safety. Semi-structured interviews with 11 Australian Nurse-Family Partnership Program staff and key stakeholders explored in more depth the nature of client adversity and how this affected Program delivery.

Findings: Most clients were described as "complicated" being exposed to extreme poverty (66% on welfare), living with insecure housing, many experiencing domestic violence (almost one third experiencing 2+ episodes of violence in 12 months). Sixty-six percent of clients had experienced four or more adversities. These adversities were found challenging for Program delivery. For example, housing conditions mean that around half of all 'home visits' could not be conducted in the home (held instead in staff cars or community locations) and together with exposure to violence undermined client capacity to translate program learnings into action. Crises with the basics of living regularly intruded into the delivery of program content, and low client literacy meant written hand-outs were unhelpful for many, requiring the development of pictorial-based program materials. Adversity increased the time needed to deliver program content.

Conclusions: Modifications to the Australian Nurse-Family Partnership Program model to reflect the specific complexities and adversities faced by the client populations is important for effective service delivery and to maximise the chance of meeting program goals of improving the health and well-being of Australian Aboriginal mothers and their infants.

Introduction

Health and social outcomes experienced by Aboriginal and Torres Strait Islander people (hereafter referred to as Aboriginal) in Australia are far poorer on average than those of other Australians. Median age at death is 20 years less than other Australians (Australian Bureau of Statistics (ABS), 2016), the mortality rate from chronic diseases is up

to six times higher and from communicable diseases (e.g. tuberculosis, influenza) up to 13 times higher (Australian Indigenous HealthInfoNet, 2016). It is estimated that up to half the life expectancy gap between Aboriginal and non-Aboriginal Australians (in common with other First Nations peoples) can be explained by differences in the social determinants of health – essentially the social (including family) and environmental conditions in which people live and work, such as extreme poverty, welfare dependency, low engagement with work and school, insecure housing, racism, multiple trauma and domestic violence (Australian Indigenous HealthInfoNet, 2016; Solar and Irwin, 2010; Greenwood and de Leeuw, 2012). Outcomes for Aboriginal

* Corresponding author.

E-mail address: leonie.segal@unisa.edu.au (L. Segal).

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mothers and babies are poorer than for other Australians, reflecting in part higher rate of teenage mothers (15% versus 2%), residing in remote/very remote areas (22% versus 1.6%), smoking during pregnancy (44% versus 12%) and higher rates of obesity and other pre-existing health conditions (Australian Institute of Health and Welfare (AIHW), 2017). Perinatal death rates among babies of Aboriginal mothers in 2015 at 13 per 1000 births were nearly 1.5 times that of non-Aboriginal mothers (9 per 1000), (AIHW, 2017). Babies of Aboriginal mothers are 1.7 times as likely to be born pre-term and twice as likely to be low birth weight, with outcomes slightly worse for Aboriginal mothers and babies living in remote/very remote communities (AIHW, 2017).

The health and social conditions experienced by Aboriginal people have both immediate and underlying causes; the latter rooted in the effects of colonisation, loss of culture and forced child removal (Ranzijn et al., 2009; AMA, 2007). Intergenerational effects of marginalisation and disadvantage contribute to the clustering of poor mental and physical health and social disadvantage (such as over-crowded housing, unemployment, poverty, low education attainment, incarceration, substance abuse) experienced by Aboriginal people. For the child who does not experience a nurturing home environment, as an adult, their own parenting capacity is undermined, a mechanism whereby the effects of trauma are transmitted across generations (Amos et al., 2011; Ranzijn et al., 2009).

Parental care in infancy is known to affect infant and child development (Cohen et al., 2016; Shonkoff et al., 2012) and consequential economic and social outcomes, such as child protection involvement, education participation and success, justice involvement and employment. Intervention during pregnancy and infancy to support parents to create nurturing and safe environments is a goal of nurse home visiting programs (Avellar and Supplee, 2013; Olds, 2002).

One such home visiting program offered to disadvantaged communities in the USA and reporting generally positive results is the Nurse Family Partnership (NFP) developed by Olds (Kitzman et al., 1997; Olds et al., 1986a,2002). The program is delivered by nurses who visit women in their home from pregnancy until the child's second birthday. Home visits occur weekly, fortnightly or monthly, varying across the program with 29 intended home-visits during infancy (to 12 months), 23 visits in toddlerhood and during pregnancy the number of visits depends on gestational age at program commencement and at delivery (Nguyen et al., 2018). The goals of the NFP are to improve child health and development and alter maternal life course enhancing mothers' economic self-sufficiency. To achieve these goals Nurse home visitors (NHV) deliver a prescribed curriculum covering the 'six domains of personal health (health practices, nutrition/exercise, substance use and mental health), environmental health (home, community, local area, work and school), life course development (family planning, education and livelihood), maternal role (physical, behavioural and emotional care of infant), family and friends (personal networking relationships, assistance with child care), and health and human services' (Nguyen et al., 2018). The NHVs support attendance at antenatal appointments and connect parents with community health and social services and establish a caring therapeutic relationship with mothers and where possible, fathers (Olds et al., 1997).

The Australian Nurse-Family Partnership Program (ANFPP) has been delivered since 2009 to Aboriginal families at three Australian sites (The Australian Nurse-Family Partnership Program, 2014), including Alice Springs in the Northern Territory (NT), Central Australia, where it is delivered by an Aboriginal Community-controlled primary care service. The US NFP model has been adapted to include Aboriginal Community Workers (ACWs) and eligibility has been extended to multiparous women of any age. The role of the ACWs is primarily to ensure cultural safety and support community engagement, and assist in addressing social determinants. In other respects, the delivery model and core program curriculum were little changed.

Aboriginal people living in Central Australia are one of the most disadvantaged and marginalised groups in Australia (Australian Indigenous HealthInfoNet, 2016; Zhao et al., 2013). More than 70% reside in the poorest socio-economic quintile (ABS, 2013). Disease burden in the NT is the highest in Australia (Begg et al., 2008), and disease burden in Alice Springs is 1.9 times the NT average (Zhao et al., 2013).

Central Australia presents a unique context for the delivery of nurse home visiting. It is the first time a nurse home visiting program has been delivered exclusively to a First Nation's peoples in a remote community.

A recent review of infant home visiting programs found that program performance is critically dependent on a good match between client characteristics and the program model (Segal et al., 2012). It is thus necessary to understand the nature of the client population and the adversities they face to reflect on the likely suitability of the FPP model and program performance. As the program has now been in place for 8 years, there is sufficient information about the client population for this reflection.

The aims of the research were to (1) describe the FPP client population in Central Australia, (2) consider how client adversity/complexity is impacting on program delivery and (3) explore the type of modifications that might better facilitate program delivery and enhance likely success.

Methods

This mixed methods study used Central Australian FPP program data and qualitative data collected in semi-structured interviews with FPP staff and key stakeholders. FPP program data were used to describe the characteristics of FPP clients. Qualitative data were used to further understand the nature of adversities facing clients and explore the impact of client adversity on program delivery, to provide a rich descriptive exploration of issues that could not be obtained from quantitative data alone.

Quantitative data

Study sample

Three hundred and eleven women were enrolled in the Central Australia FPP between March 2009 and December 2015. To be eligible for the program women had to be referred before 28 weeks gestation; be living in Alice Springs or within 100 km when < 28 weeks pregnant; and not have been a previous FPP participant. In contrast to other NFP sites, women who were not first-time mothers were also eligible. The quantitative analysis is based on 276 women who had completed at least one home visit and had at least one of the demographic, health or relationship forms completed.

Measures

Program data were collected by the NHV using standardised forms during the first four pregnancy home visits (Australian Nurse-Family Partnership Program, 2011).

- The *Demographic Details Form* (Table 1) covered language, marital/partner status, biological father of baby, living arrangements, education, income, employment status.
- The *Maternal Health Assessment Form* (Table 2) included, for instance the 10-item Edinburgh Postnatal Depression Scale (EPDS) a validated depression screening tool in peri-natal populations (Cox et al., 1987; Eberhard-Gran et al., 2001; Kernot et al., 2015). The question 'Do you have a history of any health concerns (check all that apply)?' was used to determine history of mental illness and other conditions.
- The *Relationship Assessment Form* (Table 2) collected information on whether the woman had experienced violence or abuse in the past 12 months and whether she felt safe in her home, with additional

Table 1
Sociodemographic characteristics of FPP clients in Central Australia indicating client adversity and complex life situations.

	% (n)	Adversity criteria ^a	% (n) meeting adversity criteria ^a
Age (years) <i>n</i> = 266	23.1 ± 5.6	<20 years	31.6 (84)
Minimum age	14.0		
Maximum age	41.0		
Primary language <i>n</i> = 150 ^b		Language other than English	34.0 (51)
English	66 (99)		
Aboriginal of Torres Strait Islander	29.3 (44)		
Other	4.7 (7)		
Schooling completed <i>n</i> = 256 ^b		Completed Year 9 or less	32.3 (83)
Year 6 or below	3.4 (9)		
Year 7	3.9 (10)		
Year 8	4.3 (11)		
Year 9	20.7 (53)		
Year 10	31.6 (81)		
Year 11	20.3 (52)		
Year 12	15.6 (40)		
Higher education completed <i>n</i> = 255 ^b		–	–
None	65.5 (167)		
Some TAFE/Uni/other qualification (not completed)	8.6 (22)		
Certificate or Diploma	22.0 (56)		
Associate Diploma	0.8 (2)		
Bachelor	3.1 (8)		
Ever worked in paid employment? <i>n</i> = 216 ^b	71.3 (154)	Never worked in paid employment	28.7 (62)
Currently working? <i>n</i> = 218 ^b		–	–
No	79.4 (173)		
Part-time	7.3 (16)		
Full-time	13.3 (29)		
Household income (p/wk) <i>n</i> = 253 ^b		–	–
< \$500	22.5 (57)		
\$500-\$999	32.8 (83)		
\$1,000-\$1,999	31.6 (80)		
\$2,000 or more	13.0 (33)		
Personal income (p/wk) <i>n</i> = 250 ^b		< \$500 per week	79.6 (199)
< \$500	79.6 (199)		
\$500-\$999	16.0 (40)		
\$1,000-\$1,999	4.0 (10)		
\$2,000 or more	0.4 (1)		
Main source of income <i>n</i> = 254 ^b		Rely on partner's or other income	19.3 (49)
Centrelink or other benefits	65.7 (167)		
Working (wages)	15.0 (38)		
Husband/partner (including benefits)	10.2 (26)		
Other	9.1 (23)		
Do you have a partner now? <i>n</i> = 246 ^b	82.1 (202)		
Partner biological father of baby <i>n</i> = 216 ^b		Partner not biological father or don't know	3.3 (7)
Yes	96.8 (209)		
Don't know	0.5 (1)		
Contact with biological father of baby <i>n</i> = 252 ^b		Less than daily contact with biological father	25.8 (65)
Daily	74.2 (187)		
At least once a week	9.9 (25)		
Less than once a week	8.7 (22)		
Not at all	7.1 (18)		
Living arrangements <i>n</i> = 258 ^b		Living with other adults, without own mother (excluding living alone with partner); in shelter or homeless	54.7 (141)
Partner and others, but not mother	35.3 (91)		
Other adults, but not mother or partner	16.3 (42)		
Partner only	15.1 (39)		
Own mother and others, but not partner	14.3 (37)		
Own mother and others, including partner	13.2 (34)		
Alone, including with infant/children	2.7 (7)		
In group home or shelter	1.9 (5)		
Homeless	1.2 (3)		
Number of people (including children) living in household <i>n</i> = 247 ^b	5.7 ± 3.2	6 or more people living in household	33.6 (83)
Minimum number of people	2		
Maximum number of people	25		
Number of previous live births <i>n</i> = 248 ^c		–	–
No previous children (no live births)	50.0 (124)		
1–2 children	36.3 (90)		
3–4 children	12.1 (30)		
5–6 children	1.8 (4)		

Reported as % (n) or mean and standard deviation where relevant; Variable *N* as indicated due to missing data from incomplete data forms. Percentages reported are calculated excluding missing data. Considerable missing data as noted below, particularly for language, is likely to underestimate complexity scores reported.

^a Variables included in calculating the total number of adversities experienced by clients are identified in column 3 with an adversity criterion and also shown in Fig. 1.

^b *N* = 266 demographic forms completed at intake, with missing data as follows: Primary language *n* = 116; Schooling *n* = 10; Higher education *n* = 11; Paid employment *n* = 50; Currently working *n* = 48; Household income *n* = 13; Personal income *n* = 13; Main income source *n* = 12; Partner status *n* = 20; Biological father of baby *n* = 50; Contact with biological father *n* = 14; Living arrangements *n* = 8; No. people living in household *n* = 64.

^c missing data about previous live births *n* = 28.

Table 2

Mental health and personal safety characteristics of FPP clients in Central Australia indicating client adversity and complex life situations.

	% (n)	Adversity criteria ^a	% (n) meeting adversity criteria ^a
Depression <i>n</i> = 116 ^b		EPDS score 10+	30.2 (35)
EPDS score 0–9	69.8 (81)		
EPDS score 10–12 (at risk)	12.1 (14)		
EPDS score 13+	18.1 (21)		
History of mental health condition <i>n</i> = 262	6.5 (17)	Yes	6.5 (17)
Personal safety <i>n</i> = 210 ^c			
Do not feel safe with people who live in home	6.1 (7)		
Do not feel safe with people who come into home as visitors/to stay	29.6 (34)		
Afraid of current/previous partner or someone important to you	17.3 (36)		
Ever been emotionally/physically abused by partner or someone important to you ^d	41.7 (96)	Ever abused	41.7 (96)
In the last year, been forced to have sex	2.0 (4)		
In the last year, been hit, punched, kicked or otherwise physically hurt	28.8 (60)		
Number of times you were physically hurt in last year:		Experienced violence 2+ times in past year	31.6 (60)
None	58.6 (85)		
1–2 times	26.2 (38)		
3 or more times	15.2 (22)		
Number of times someone hit or pushed you in last year:			
None	56.3 (81)		
1–2 times	27.8 (40)		
3 or more times	15.9 (23)		
No. times someone punched, kicked or cut you in last year:			
None	66.4 (95)		
1–2 times	23.1 (33)		
3 or more times	10.5 (15)		
No. times you were burned, bruised, broke bone in last year:			
None	84.5 (121)		
1–2 times	10.5 (15)		
3 or more times	4.9 (7)		
No. times someone caused you a head injury in last year:			
None	90.1 (127)		
1–2 times	8.5 (12)		
3 or more times	1.4 (2)		
No. times someone hurt you with a weapon in last year:			
None	85.3 (122)		
1–2 times	11.9 (17)		
3 or more times	2.8 (4)		

Reported as % (*n*) or mean and standard deviation where relevant; Variable *N* as indicated due to missing data from incomplete data forms. Percentages reported are calculated excluding missing data. Considerable missing data as noted below, is likely to underestimate complexity scores reported.

^a Variables included in calculating the total number of adversities experienced by clients are identified in column 3 with an adversity criterion and also shown in Fig. 1.

^b *N* = 262 health assessment forms completed at intake, with missing data as follows: Edinburgh Postnatal Depression Scale (EPDS) *n* = 146.

^c *N* = 210 relationship assessment forms completed at intake, with missing data for items as follows: Feel safe in own home *n* = 95; Feel safe with other people who come to home *n* = 95; Afraid of partner/someone important *n* = 2; Ever been abused by partner/someone important to you *n* = 81; No. times forced to have sex *n* = 6; Been physically hurt in last year *n* = 2; No. times physically hurt *n* = 65; No. times hit/pushed *n* = 66; No. times punched/kicked/cut *n* = 67; No. times burned/bruised/broken bone *n* = 67; No. times head injury *n* = 69; No. times hurt with weapon *n* = 67.

^d Missing data imputed from questionnaires completed at time points subsequent to intake for *n* = 24 and updated response to 'yes' if disclosed at subsequent time point *n* = 15. This was done as FPP staff indicated that clients may not disclose truthful response until relationship was established, or if the perpetrator of the abuse was nearby when form was being completed.

questions on the number of times serious physical violence had been experienced in the past year.

- An Adversity checklist of vulnerabilities was developed for this study. The items included drew on extensive prior research of the authors (e.g. Twizeyemariya et al., 2017; Segal et al., 2011, Doidge et al., 2017), a review of the literature (Fryers and Brugha, 2013; Centers for Disease Control and Protection (CDC), 2016; Australian Institute for Family Studies (AIFS), 2016), a knowledge of the data items available to the study team for inclusion in any adversity score, and in-depth discussions with FPP staff. The aim was to identify adversity items that likely affect quality of parenting (potentially mediated by poor mental health), program delivery and capacity of mothers to action learnings – and so pertinent to the preferred program model and likely program success. Fourteen risk factors conferring vulner-

ability and hypothesised to impact on program participation and/or delivery were selected, in close consultation with FPP staff, together with criterion for defining high/low vulnerability (Tables 1 and 2). (For example, a client aged 19 years or younger was deemed to represent greater vulnerability than older clients.) The checklist was piloted with FPP staff prior to finalisation.

Data analysis

Descriptive statistics were used to describe client demographic and social characteristics, history of mental health conditions, depression, reported violence and threats to personal safety.

An Adversity Score was created for each client by assessing their responses in the three data forms against the vulnerability criteria. Ex-

perienced risks were summed to create an *Adversity Score* from 0 to 14 ([Consistent with current practice \(CDC, 2016\)](#)). Missing data was counted as zero risk, generating a conservative estimate of risk score. All participants had completed the demographic form, which contained 10 of the 14 adversity items and almost all had completed the maternal health form and 70% the relationship form. Thus, despite some missing data, we had quite comprehensive information about adversity.

Semi-structured interviews

A Phenomenological method of enquiry was used to understand the lived experiences of FPP staff working with complex clients within the program. This was combined with a participatory research method, which converged the knowledge and perspectives of FPP staff and researchers to interpret the data and develop desirable program modifications ([Bergold and Thomas, 2012](#)). To this end, the researchers met regularly (approximately bi-monthly) with the FPP team, as described below.

Through face to face interviews, a focus group, and reflexive discussions during team meetings, FPP staff shared their experiences of working within the program. The focus was on understanding client adversity and its impact on program delivery, and how FPP might be improved to better meet client needs. A semi-structured interview guide was developed with the FPP team and used to initiate discussion, with follow-up probing questions to explore emerging concepts. Questions were varied to align with the role of the interviewee. Recruitment and interviews were conducted by DZ. Interviews were audio-recorded and transcribed. They ranged in length from 50 to 120 mins. All nine FPP staff employed between April and June 2016 were interviewed – four NHVs, three ACWs, one Nurse Supervisor and one administrative officer. In addition, one midwife and one women's health service manager who refer clients to the program and work closely with the FPP team were interviewed. Five of the interviewees were Aboriginal. The NHVs had been employed in the FPP for between 11 months and four years and the ACWs for at least 4 years. The three other interviewees had worked with FPP for 20 months to three years.

Analysis

Interviews were transcribed verbatim and imported into QSR NVIVO software (Version 11) for thematic coding. A combined deductive and inductive analysis approach was used to analyse interviews against pre-established themes and identify emerging themes. Detailed field notes taken during interviews were summarised and used to develop a broad thematic guide for interview coding, allowing further themes to emerge during coding. Coding and analysis of interviews was conducted by DZ. A process of member checking was employed to reduce the risk of researcher bias and ensure the voice and views of the participants were accurately represented. Conversations were continued for as long as required to ensure interviewees had the opportunity to cover all the issues that they thought pertinent, to enhance the prospect of data saturation. A review of material gathered confirmed that saturation had been reached with all points raised identified in at least two interviews.

Findings were presented and discussed with the project research team and the FPP staff. Themes and interpretation of findings were refined following these discussions. All quotes for inclusion in the manuscript and the interpretation of findings were presented to each interviewee to check that they were satisfied and whether any material needed to be revised or deleted.

Results

Characteristics of FPP clients in Central Australia

Characteristics of FPP clients are presented in [Tables 1](#) and [2](#). The mean age of clients was 23 years, with 32% aged less than 20 years, 15.6% had completed secondary school, compared with 75% of all

young Australians ([Lamb et al., 2015](#)), 80% had a personal income of less than AUD 500 per week (noting the poverty line is AUD 426 for a single adult) ([Australian Council of Social Service \(ACOSS\), 2016](#)) and 30% were at risk for/had depression. In terms of household, 15% lived just with their partner and 2.7% on their own (with their infant), the majority were in situations considered vulnerable, one third living with six or more people (maximum 24). Almost one third of clients reported experiencing violence two or more times in the previous year and 30% did not feel safe in their home. Sixty-six percent of FPP clients experienced four or more adversities and 22% experienced six plus adversities ([Fig. 1](#)). The mean adversity score for the 71 clients who had completed all data forms was 4.7.

The interviews provide a richer understanding of the complexity of the client population. The key themes that emerged from interviews were literacy and language, client transiency, the home environment, housing insecurity, client complexity, the nurse visitors as case managers and the implication of multiparity. The client population was described as “*complicated*”, with high needs. The adversities described by the FPP team, sit broadly within the social determinants of health, centred on extreme levels of economic and social disadvantage, lack of education, low literacy (in any language), low or no income, welfare dependency, housing insecurity (and no ‘voice’ in the household), lack of partner/family support and exposure to violence. Many of the social issues identified were viewed as normative within the Central Australian Aboriginal community.

One Aboriginal interviewee reflected that the experience of colonisation occurred more recently in Central Australia than elsewhere in Australia, such that the effect of trauma from this history and associated policies were still impacting on women and their children in the present. This presented a unique context for the delivery of FPP in Central Australia:

“It [FPP] hasn't really been involved with Aboriginal communities before.... In Australia as well as social disadvantage, our clients experience the historical and contemporary effects of colonisation, and policies impacting Aboriginal people, culture, identity and self-worth etc... The first experience of colonisation in Central Australia did not occur until the late 1800s, and was a relatively slow process due to geographical isolation and to a degree has protected Aboriginal languages and cultural tradition. There are many Aboriginal people now living in Alice Springs from other Aboriginal language groups, whose country is located several hundred kilometres away, and being more isolated and remote the colonisation experience was even later, adding to the complexity level of our clients. Colonisation and policies have negatively affected generations of Aboriginal people and undermined traditional parenting practices and the effects of dislocation and trauma is remembered and strongly felt”

Nature of client adversities and implication for FPP delivery in Central Australia

The multiple adversities experienced by FPP clients affected the way in which FPP staff were able to work. Views of interviewees have been summarised below under the key factors impacting on FPP delivery. Further quotes are contained in [Table 3](#).

Low literacy and English competency

Literacy was identified as a barrier to the delivery of program content, rendering written hand-outs of little use. The NHVs described needing to find other ways to deliver program content, for example through pictorial-based content (that they had to develop) or verbally. Both strategies were time consuming but also meant women may not have useful material to refer to later:

“...it's written content, a lot of literacy... I may not hand out that material... but it's a prompt for me of the content that is to be covered in that visit. And then I will deliver that in a way that's appropriate for

Table 3
Summary of quotes by theme.

Theme	Quotes
Client literacy	<p>“...some women have lower literacies, so rather than giving all these papers out and going through with her, I’ll just talk it through. And you do get to know the client well enough that you plan your visit with her to what her level of language and comprehension might be. So some of it might all be picture stuff. Some of it might be just talking it through.”</p> <p>“An example would be the additional issues that might arise because of language barriers... I couldn’t quote the percentage but there’d certainly be a number of clients involved with the program locally that are speakers of an Aboriginal language. And it’s not necessarily the local language, Arrente. It could be Warlpiri or Pitjantjatjara or any of the other Central Australian Aboriginal languages.”</p>
Transiency	<p>Transiency is part of the culture and lifestyle of Central Australian Aboriginal people. Transiency can impact on program delivery and client engagement, but may also be positive for mothers if they improve their situation:</p> <p>“...I think it’s the ladies that are transient that you don’t get to really build up that good relationship with, and they can become quite unengaged”</p> <p>“You can’t stop people from moving away, and sometimes it’s a good thing that they leave and they enter a more supportive context, or escape a violent relationship.”</p>
Home environment	<p>The home environment is not always conducive for conducting home visits, so they are frequently conducted outside of the home, in the yard, the NHV’s car or at the FPP office:</p> <p>“If anyone’s around it can really change the way she’ll interact with me. So I can’t always talk about intimate things like safe sex or family violence or those kind of things if there are other family members around.”</p> <p>“I’ve just been to Brisbane and done PIPE training which is a program that’s all around activities where you can talk about attachment and parenting and routine, and actually do activities together around brain development. And for that program to be delivered it’s so rare that it will actually be the right context for that, where you’re actually sitting down and the baby’s ready to engage and play with you. It’s really hard to deliver that stuff in the car...”</p>
Housing insecurity	<p>Housing insecurity was noted as a critical issue which undermined program delivery and disrupted how the nurses worked with clients:</p> <p>“All that social stuff, that actually really makes a difference to people. If I was visiting women who were housed we would get a lot more talking done about parenting.”</p> <p>“And so for women who are homeless and experiencing DV, you just don’t ever get to content half the time...”</p>
Client complexity	<p>FPP clients in Central Australia were described as ‘complex’ and experiencing multiple adversities which impacted on program content delivery and engagement:</p> <p>“Well it creates a lot more work if a client is experiencing domestic violence, and needs support to get suitable and safe accommodation, legal advice or to access Centrelink benefits. The advocacy and support bites into the time of the nurse home visitor and affects the scheduling of visits, which then need to be renegotiated and delivered after the crisis has settled.”</p> <p>“You may go to do a visit and the child may be unwell. The child may have infected sores... They may not have had any transport to get to the clinic. I will offer would they like to use my phone, we always have our phones. Would they like me to call the clinic, would they like me to accompany them to the clinic? Let them know that this is something that needs to see a doctor... and often as advocate and support, accompany them to the clinic and combine the visit and the content and all of that around that. Many visits are at clinic or antenatal appointments or hospital appointments or paediatric wards, or whatever’s happening at the time. Women’s shelter, domestic violence, hospital A&E. When the relationship’s built and the trust is there, you’re the person that they will contact... And there might be social health issues, food security, other people might be stealing their food. There might be no income, or they might not have any money for two weeks...lots and lots and lots of layers of complexities that might be preventing them from having adequate food.”</p> <p>“It could be a crisis where she’s run out of money and she’s been hungry for the last few days and all she needs is access to transport and somewhere to go for access to some community support service that might offer a food voucher or a food bag for a couple of days. It could be that she’s had a big argument with her family and she wants to get out of the house and get a room at the hostel for a few days so it could all be around just relocating her. And it could be even more of a crisis situation where she has been in a DV situation or something like that, so it’s about reporting and getting her linked into those DV and women’s support services”</p>
Nurses as client case managers	<p>“...often when you ask a woman when’s your next appointment, or did anything come up in the appointment, they won’t know. And so you do a little bit of pre-reading of their notes and to find out what the story is. Because often they haven’t actually walked away from that interaction with a health service knowing what’s happened and so you do a lot of interpreting.”</p> <p>“Yeah that can take up a whole lot of time - just referring, communicating with those services, all those people, sending emails, talking to them on the phone, and then having to go off for a case conference for that client can take up a lot of time and obviously if you’re going to a case conference, you’re not going to get a visit in. I would say it’s a pretty big chunk of time out of the week just doing that stuff.”</p> <p>“But the referral process is actually very time-consuming in itself and it also requires that you maintain that contact with that service. So for example I have a young woman who’s out on parole, a mum...so she’s out on parole, so she’s working with the [Stopping Violence program] and she’s fallen into a hole in her life and she’s been difficult to engage, difficult to find. And so for a client who I actually haven’t seen, I spend an inordinate amount of time talking to other people about her. Talking about what’s going to happen if I see her. So that’s client-related but there’s nowhere that is accounted for.”</p> <p>“I had a client who every visit I’d come out and I’d say ‘have you taken her to the clinic?’, ‘no I’ll take her tomorrow’. And she lived 50 k’s [kilometres] out of town. So for me it’s 40 minutes to get her, so 20 minutes to pick her up, 20 minutes to take her in, 20 minutes to take her back, 20 minutes to get home. So it’s a whole day gone for me to provide transport for her. So we’re trying to figure out ways of services to get her to her antenatal appointments, which was sketchy... But, in the end it was just, eventually I just said ok, I put aside this day, I’m coming to get you. And, it was great, she came, she was engaged. It’s access issues for a lot of women.”</p> <p>“Oh it can be frustrating. It can be great, it just depends so much. I mean I find it frustrating that sometimes there’s an expectation you’ll facilitate someone to health seek, and yet you go and you have to sit and wait for 90 minutes. There’s no prioritisation of you getting that client in because of your time... It’s not easy for us to facilitate health seeking when potentially it’s a four hour appointment when you consider everything that needs to happen from picking her up, having the appointment and then being dropped home.”</p>
Multiparity	<p>Multiparity adds an extra level of responsibility to the roles of the NHV and affected how they work with clients:</p> <p>“And then you might come across things like dual breastfeeding because the mother has the babies close together or being pregnant while you’re still breastfeeding and things like that, so there’s other different discussions that happen. I reckon visits with mothers who’ve had multiple babies can take a bit longer, especially if you’re transporting them from home to the office there’s an extra child to pack in the car, and visits themselves can be a lot more challenging and frantic because there is the other distractions.”</p> <p>“But actually we’re also looking at what’s going on for that other child. And I can spend a lot of time with other siblings trying to sort out playgroup, trying to sort out their growth faltering. Talking with mum around that stuff. And we don’t measure that at all, but I think there are definitely positive impacts of the program on the broader family.”</p> <p>Involvement of multiparous women was seen as a positive as it provided the opportunity for mothers to learn and moderate past behaviours:</p> <p>“...but then for one of these women that had all of her children taken off, so then you go okay, is there an opportunity to make a change for this woman in which she might be able to moderate behaviours and have some extra support and decrease the risk of that child being taken away...”</p> <p>“... they want to reiterate what they’ve done with their first child is similar to what we’re talking about now or they might learn something and pick something up and do things differently with this baby. And often it is the mothers I think that have had other children who want to be an even better parent so that might be one of the reasons why they do join the program.”</p>

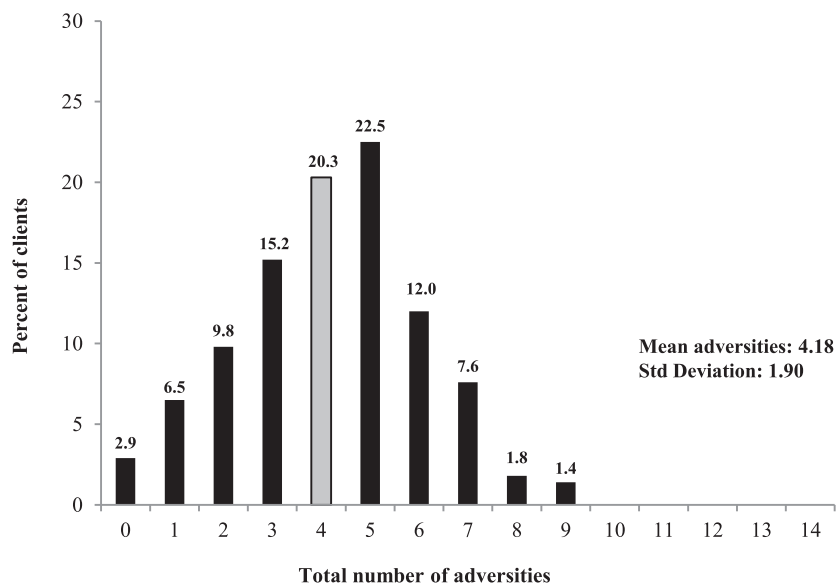


Fig. 1. Number of adversities experienced by Congress FPP clients in Central Australia ($n=276$)

^aMean adversities calculated from client responses to demographic, maternal health assessment and relationship assessment forms completed at program intake. Data for all clients who completed at least one form is included ($n=71$ clients completed all forms). There was considerable missing data in particular for primary language ($n=116$) and depression ($n=146$) variables. Thus adversity scores will be a lower bound estimated.

each client. So we have to create other resources that are more visual, or pictures. For our clients English might be their third or fourth language.”

“... when I first started it was just like, well how am I meant to do this? I've got 12 pieces of paper; I've got someone who's illiterate. Am I going to just read this all to her? How does this work? How do they expect me to do this?”

Client transiency

Living transiently is part of the culture and lifestyle of Central Australian Aboriginal people. But, there is also an interplay between housing insecurity/overcrowded conditions and transiency. Women who do not have safe or secure accommodation may move out of town to live in communities or may frequently change addresses. Transiency produces challenges for FPP staff in locating clients and conducting visits. It can disrupt the planned home visit schedule:

“Oh it [transiency] is quite challenging, it takes up a lot of time. But it's the nature of Central Australian Aboriginal clients so it is part of the way they live Clients will go out bush for funerals; roads will be closed for ceremony for months at a time. Clients might get stuck out bush ... and phone reception that might not be there. But a lot of my clients will contact me when they do come back to town, they'll text me, they'll let me know, they'll come and see me. So I'm flexible with maintaining that engagement even though they might have missed three weeks.”

Home environment

Conditions in the home are not always suitable or conducive for conducting home visits. This impacts not just on the location of the visit, but also the nature of the engagement with the client (and their infant) and the types of activities that can be conducted:

“There's a lot of really private stuff that we talk about, a lot of sensitive information that women don't necessarily really want to share with their families. We're meant to try and deliver most of our visits in the home, and we get about a 50% hit rate in the home. And that's just because some women's homes are not conducive for visiting. You see the videos from the States and they're sitting on their carpet and they're all alone and they've got a couch to sit on and a floor for the baby to play. And you know some women just don't have that. And there's rarely a time when there's a private space to sit down and have a visit. Even when you're

CLIENT ADVERSITIES:

1. Aged less than 20 years
2. Primary language other than English^a
3. Completed year 9 or less of schooling
4. Never worked in paid employment
5. Personal income less than \$500 p/week
6. Rely on partner's or other's income
7. Partner not biological father or don't know
8. Less than daily contact with biological father
9. Living with other adults without own mother; in shelter or homeless
10. Living in household with 6 or more people
11. At-risk or suffering from depression (EPDS ≥ 10)^a
12. History of mental health condition
13. Experienced emotional and/or physical abuse
14. Experienced violence 2+ times in past year

visiting someone in the yard. So a lot of visits happen in cars. Even just sitting out the front of the house in the car for an hour, with the air con on in summer.”

“When you're in that kind of car environment it can be hard to do activities, and activities are a really great way to engage with women who have poor literacy and who are non-verbal or very shy. So that kind of direct stuff, like direct full on talking visit may not be that appropriate for her. And so you're in a car. So you can't get your scrapbooks out and pull photos through while you're talking about stuff, which is where I've found lots of the really good stuff can come out.”

“Especially over the summer months it's very hot in town camps and in [remote communities]. You're not inside the house because there's too many people inside the house or she might be feeling like she doesn't want you inside her house for various reasons...often inside the house is dirty washing, rubbish and flies. It can be a messy, dirty environment. And so women don't necessarily want to have a visit in that environment and would prefer to sit in the car, on the veranda or go into the office. It's also not always private in people's homes because there's people in there with lots of family or visitors around. I mean there's often no furniture, just mattresses on the floor, and food and rubbish inside. So you're often sitting outside in the heat. Which is not always very comfortable, so you might go into the car. Or you might just have a shorter visit outside.”

Housing insecurity/other social determinants/lack of power

The housing situation was described as “dire” with long waiting lists for public housing. Living in overcrowded housing, with no rights and no housing security was seen as a contributing factor to other social problems such as food insecurity, poverty and violence. Insecure housing together with other adversities could limit some women's control over their lives, affecting client engagement and the potential for achieving desired change. Often NHVs had to address fundamental issues faced by clients and respond to crises as a priority. NHVs might deliver program content while waiting for an appointment, or in the car while driving with the client.

“Housing would probably ameliorate so many more social problems — that people have adequate housing with a reasonable amount of people and so it's not overcrowded. It's dire, and there's long waiting lists and

it evokes overcrowding, it evokes domestic violence. You can't live in a house with 12 people and not get cranky with someone. It increases the risk of food insecurity, because everyone is coming over and eating your dinner."

"You talk about sleep and routines, and because people have no control over their environment they can't put into practice any of your strategies. You talk about nutrition and people aren't food secure. You talk about safe sex, but someone's in a domestically violent relationship and has no control over whether a condom is used and what he does. So I guess it just puts limitations on what you can talk about. There are times where I catch myself talking about stuff and I'm like this is just bullshit for this person, means nothing to them because they've got no power over this most days of the week... I guess that's how it impacts on their ability to put into practice that stuff."

"Definitely one of the first things that often happens whenever we get a referral is that we're looking at their accommodation and their finances and if they've not got money, if they're not linked into Centrelink [social security], if they haven't got their housing applications in, that's some of the first stuff that we do. That's core really. You can't talk about ... buying a cot for your baby if you haven't got a house to put it in ... so the fundamental things come first. Often Centrelink and housing are the first couple of things that get tackled."

"We can be dealing with a crisis but I really wanted to talk about labour or something because that's coming up very soon or I really wanted to reflect back on something that I delivered the week before or something like that. And that can be the frustrating part about the program because there is so much there that we could be talking about... but their everyday high complex lives, I don't like to say get in the way, but it does get in the way of delivering the program. But at the same time they're not going to want content if there's this crisis happening and we might be the only ones that can support them through the crisis"

Nurse as 'case managers'

Client engagement with health and social services can be poor for a multitude of reasons, including negative past experiences with 'white' and 'mainstream' services, absence of trusting relationships and low literacy contributing to a lack of understanding of paperwork and processes. Services are not always helpful in their approach to vulnerable clients. FPP staff spent considerable time supporting access to services, which was however considered essential to remove 'roadblocks in client's lives' and help improve their overall situation.

"This is not a case management role, but a lot of the work is case management like. [Addressing] obstacles, sometimes it's difficult at the hospital or Centrelink, where English is the common language ... If the client was there by themselves things may not go as well. So a lot of our energy goes to educating the other service staff about the complex issues of our clients. When services expect the client to fit in with the service, rather than the service fitting in with the client."

"Helping with appointments is a trade off on our program. If we facilitate or support an appointment, that's one less FPP visit that woman gets. So for me, it comes down to risk. If the woman has missed four antenatal appointments, or her child is failing to gain weight and is continually missing appointments, I will prioritise getting her to the clinic over doing FPP content."

Program eligibility – multiparity

In contrast to the standard NFP model, women who already have a child can participate in the Central Australia FPP. For the FPP staff this was noted as being potentially advantageous for the women but also posing some challenges adding "another level of responsibility" to their roles:

"I've got some clients who are benefiting enormously from having the program for their second or third child. And you can often see the benefits then feeding back with the older children."

"But then it's also that responsibility of being a nurse and going into that home and you do take in the environment and everybody around, and the other children and how they're looking and how they're interacting and communicating and are they doing the right things for a three year old. Are they still in nappies, are they communicating in words and have they got a good vocabulary? And if they haven't, you do know the developmental levels of the older children and if you're not seeing that, it does raise red flags and so you do go off track and lose focus with the mother and start talking about her three-year-old and making referrals because you can't ignore it."

Discussion

This research described in considerable depth the characteristics of Central Australia FPP clients and the views of FPP staff on the level and nature of client adversity and how adversity and complexity affect program delivery.

It was found that many clients experienced multiple adversities, including insecure and/or overcrowded housing, low education attainment and low literacy, low or no income, unemployment and domestic violence. Client complexity and their living environment was reported to impact on program delivery – how and where the program could be delivered, how staff worked with clients and competing demands on their time that might reduce time that could be spent delivering program content. High levels of adversity were identified even though missing data meant our estimate was conservative.

Despite these challenges, an evaluation of program implementation and coverage indicates that the FPP is well accepted by clients, with retention and rate of home visit completion comparable (or better) than the US NFP, a considerable achievement given client mobility and complexity (Nguyen et al., 2018). This is consistent with findings of Olds and colleagues who found the NFP to be more beneficial for the most disadvantaged participants (Olds et al., 1986a, 1986b), and the review by Segal and colleagues (Segal et al., 2012).

However, the mixed success of infant home visiting programs internationally, with success closely tied to the match between program components and client characteristics (Segal et al., 2012), underscores the need to review the program model, for the particular population. This is especially so when a program is delivered within a radically different setting to that in which it was developed.

Central Australia presents a unique context for the delivery of the FPP. This is the first time the program has been delivered to just an Aboriginal population and program involvement is not restricted to young (< 21 years) first time mothers. The remote location, high adversity and disadvantage, and trauma history add further complexity. While it is difficult to compare the complexity and disadvantage experienced by the Central Australia FPP clients to the participants of the US NFP, we note the high level of disadvantage of participants of the Memphis trial (Kitzman et al., 1997) (92% African American, 97% unmarried, 67% less than 19 years old, 85% from households at or below the poverty line, and an average 10.1 years of education); and the Denver trial (Olds et al., 2002) (86% of participants unmarried, 4% spoke monolingual Spanish, 17% experienced domestic violence in the last six months). In comparison, 32% of Central Australian clients were aged 19 years or less, 80% had an income at or below the poverty line (AU\$436.20 in 2016) (ACOSS, 2016), just 36% had completed more than 10 years of education and 50% percent had experienced violence at least once in the past year. Such comparisons do not, however, provide a complete understanding of the unique environmental and cultural aspects that may increase the complexity of Central Australian FPP clients.

Home visiting is based on the premise that women feel more comfortable in their own home than in a clinic or office. However, in Cen-

tral Australia, the home environment was often not conducive for home visits. Overcrowded housing, homelessness and insecure living arrangements were noted as the most important issues affecting clients and impacting on program delivery. Home visits were frequently conducted outside of the home. The NHVs were flexible in conducting visits in alternate settings, such as sitting in a car or covering material when taking clients to appointments. However, this compromised the type of activities with the client (and infant). As such, further consideration of how/where to deliver 'home' visits when the home is simply not suitable is indicated. What is required is a space that is conducive to delivery of program content, accounting for the weather (very hot in summer), suitability for an infant/toddler, travel time, and potential to involve fathers or other family members. The fitting out of one or more special purpose bus/vans as a mobile kitchen/living area has been proposed as a possible partial solution.

Poor housing was also identified as a barrier to achieving improvements in client outcomes. Finding alternate housing was identified as core to giving women some control over their home environment, removing them from overcrowding, domestic violence, food insecurity and reduce exposure to substance abuse. However, long waiting times for public housing (5 to 7 years for non-priority applicants) (Northern Territory Government, 2017) often meant no solution was possible. Advocating for other services to better address the social determinants of health seems critical. McDonald et al. (2012) also noted that socio-economic deprivation can undermine the effectiveness of home visiting programs.

The development of the nurse-client relationship is a core component of successful client engagement (Kurtz Landy et al., 2012; Olds et al., 1997). Once this relationship has been established, the NHV becomes the trusted person in the woman's life and as a result often feels obliged to take on the role of 'case manager' and 'advocate', assisting the woman to access and navigate services. This is somewhat of a deviation from the intended role of the NHV, and can impact on time available for delivery of core program content.

Other time-consuming activities relate to engaging hard-to-reach clients (a particular role of the AHWs), the additional duty of care to respond to the needs of the other children when working with multiparous mothers, low literacy such that written materials were often not useful, and time required to travel across large geographical distances (up to 100 km beyond Alice Springs) to conduct home visits. Such sources of time pressures suggest a need to review caseload allocation in the ANFPP, and/or look at the possibility of expanding the role of the ACW or introducing a position dedicated to addressing social determinants (such as housing, income, mobility, literacy).

Caseload has been an issue internationally. An early evaluation of the Canadian implementation of NFP found caseload an issue, noting that nurses were able to manage 12–15 clients, but found it challenging as caseloads increased to 20 clients (Jack et al., 2012). Evaluation of the NFP trials in the US reported that nurses felt unable to manage the required number of visits with a caseload of 25, and were encouraged to follow a modified visit schedule, paying fewer visits to families with lower needs (Olds et al., 2013; Olds and Korfmacher, 1998). In recognition of the impact of high needs clients on fidelity to program delivery, Olds et al. (2013) have begun developing a method of classifying families according to their risks and strengths to provide guidance for nurses around adjusting visit frequency to client needs. Allocating a mix of cases to each NHV in terms of client complexity is another strategy. Of course, such strategies do not help if most clients are highly complex.

This study has identified where the delivery and core program model may be mismatched and some ideas about how it could be enhanced to better suit the needs of this highly vulnerable population. Resourcing and caseload allocations should be monitored to ensure they reflect the high needs and vulnerabilities of the client population. There are also other possible responses, around program design, for example to up-skill the ACWs to be able to take on more of the case management role. Trying to ensure other parts of the service system – such as housing, edu-

cation and training/adult literacy meet their obligations is also critical. It is unreasonable to expect an infant home-visiting program to solve underlying social issues. Insufficient attention was given initially to the preparation of materials for low literate clients. An initiative is currently underway through the ANFPP to address this issue and develop some pictorial materials. One aspect of program delivery not considered thus far relates to engagement of fathers with the program which is low and might need some specific strategies.

Despite the challenges, all FPP staff were convinced that the Central Australian FPP provided a much needed and much valued service for a very vulnerable client population and that with some minor modifications the program could be even better placed to meet the needs of the client population.

Conclusion

The research highlights the need for careful work, prior to implementation of a protocolised program in a different setting, to ensure client characteristics are well understood and adequately reflected in program design. A further review post-program-implementation is also desirable, when client characteristics can be more comprehensively defined.

Developing a careful and detailed description of client complexity/adversity is important in any infant home visiting/family support program. This is rarely done. We are calling for in-depth description which goes beyond the standard socio-demographic descriptors. This is critical to an adequate understanding of client's needs and the adversities they face and how these may affect program delivery and impact program effectiveness. This manuscript contributes to an understanding of the key attributes that might be included in a description of adversity and the potential data sources, in administrative data and specific surveys, complemented by qualitative research.

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