

Aboriginal peoples' lived experience of household overcrowding in the Kimberley and implications for research reciprocity in COVID-19 recovery

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Abstract

Objective: Household overcrowding was identified early in the COVID-19 pandemic as a risk factor increasing transmission and worsening outcomes. Nirrumbuk Environmental Health and Services designed this project to deepen understanding of Aboriginal peoples' experiences of overcrowding in social housing.

Methods: Our household survey explored overcrowding, capacity to respond to COVID-19 directives and the Canadian National Overcrowding Standard (CNOS).

Results: For 219 participating Aboriginal households, usual number of residents per household ranged from 1 to 14, increasing with short- and long-term visitors. 17.8% had occupants who themselves were on waiting lists for their own home. Nearly one-third of houses had three generations under one roof. 53.4% indicated isolation of COVID-19 cases as 'extremely' difficult. 33.8% indicated their community could not manage COVID-19 at scale. Overcrowding was defined by interpersonal dynamics or consequences such as plumbing blockages or conflict rather than the number or people or ratio of people to bedrooms. 64.8% welcomed CNOS to determine acceptable and healthy occupancy levels. Participants encouraged research about environmental health in Aboriginal hands.

Conclusions: Cultural obligations, poverty and social housing waitlist management impose extreme demand on remote housing. CNOS relevance was endorsed but tempered by lived experience.

Implications for Public Health: Aboriginal-led research is directly accountable to communities through reciprocity and kinship. Nirrumbuk has already modified service planning.

Key words: aboriginal environmental health, aboriginal-led research, housing, remote public health

Introduction

Once aerosol, droplet and fomite transmission routes for SARS CoV-2 were confirmed epidemiologically in the COVID-19 pandemic, household overcrowding was quickly identified as a risk factor for increasing infection, morbidity and mortality for Aboriginal and Torres Strait Islander people. As early as March 2020, the Commonwealth Government's *Management Plan for Aboriginal and Torres Strait Islander populations* recognised housing and

overcrowding as critical social determinants.¹ Whilst this Plan was informed by the clinical expertise of the COVID-19 Aboriginal and Torres Strait Islander Advisory Group, it contained no specific guidance. Other resources developed early in the pandemic similarly identified housing as key but offered little for operational decisions to ensure consistent data-driven decisions for local pandemic responses on the ground.²⁻⁴ Yet remote Aboriginal communities rely almost entirely on social housing controlled by governments. Consequently, overcrowding is a sensitive issue. Nirrumbuk Environmental Health

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and Services ('Nirumbuk') is an Aboriginal community-controlled service provider with a prominent footprint across the Kimberley region of remote northwestern Australia. As a trusted and highly visible organisation providing environmental health services, our response was critical during the COVID-19 pandemic. We were well-placed to initiate a 12-month research project with the aim to deepen a shared understanding of Aboriginal peoples' experiences of overcrowding. The Kimberley Aboriginal Health Planning Forum (KAHPF) Research Committee supported this project in November 2020 (KAHPF 2020-014). The WA Aboriginal Health Ethics Committee (WAAHEC) approved it in November 2020 (WAAHEC 20/1034).

Method

Nirumbuk's Aboriginal Chief Investigator team planned and implemented all aspects of the research including community engagement, fieldwork, interpretation of results and write-up. Our accountability direct to Aboriginal communities stems from our own creation in 1993 by Aboriginal community leaders. As described below, our adherence to the research principle of reciprocity influenced every design decision. Knowledge exchange was integral during data collection. Uptake of research insights into service delivery was an obligation from the outset. Our research introduction explained our purpose to understand overcrowding to develop '*... a healthier model that better reflects our standards and is true to the way we live*'.

Survey design and administration

Our 14-page survey for home-based interviews contained seven main sections.

- House details including usual household residents, room use and sleeping arrangements
- Short-stay and long-stay visitors in the previous 12 months
- Household capacity for COVID isolation and quarantine (five-point Likert scale from 'extremely' to 'not at all')
- Culturally adapted strategies for overcrowding
- Views about the Canadian National Overcrowding Standard (CNOS) used by Australian governments to measure overcrowding⁵
- Ideas for solutions and next steps

At the end of our survey, tenants were asked to consider participating in an additional assessment of health hardware necessary to avoid SARS-CoV-2 transmission. Consent was also sought for health data access for the previous twelve-month period. These data will be reported separately.

Community engagement and recruitment

To answer our research questions, consultations about the project were initiated across the Kimberley, a region six times the size of Tasmania. Three sub-regions comprising Freshwater, Saltwater and Desert peoples would yield a diverse sample of households. This approach also facilitated access to small communities in each location and 'outstations' (small residential compounds with variable infrastructure for 2-3 families located away from towns and communities). Commencing June 2021, Nirumbuk engaged three community councils to discuss this project. Consultations began with an introduction to the project, an outline of requirements for participants and initial draft questions. Resources to support these

meetings included a slide deck and community profiles using 2016 Census data. In August 2021, all councils agreed to participate and directed how households in their respective community would be approached including door knocks and volunteer recruitment.

Data collection, management and interpretation

Home-based interviews occurred from August to November 2021 ('hot time' in Kimberley vernacular). Interviewers adhered to COVID-19 regulations including personal protective equipment (PPE). Hard-copy data sheets were shared openly with householders as completed. Once returned to Nirumbuk's headquarters, data were de-identified, coded, entered and cleaned during January 2022. For quantitative data responses, frequencies were analysed using SPSS. We calculated the number of persons per bedroom by dividing the total number of persons usually resident in the dwelling by the number of bedrooms in the dwelling, and rounding this ratio to increments of 0.1 for analysis. For qualitative data responses, Aboriginal Chief Investigators as a mixed inter-generational and gender team identified themes and insights through iterative conversations and sense-making together.⁶

Results

Research process

Fieldwork provided an opportunity for 14 Nirumbuk staff to experience structured data collection. The number of interviews completed by each team member ranged from 1 to 65 (median 3, mode 1). The time required to complete interviews was provided for 52 interviews (23.7%) and ranged from 10 minutes to 60 minutes (mode 20 minutes; median 20 minutes).

Demographics and household characteristics

Quantitative and qualitative data were obtained from 219 household participants. For household surveys, 68.9% of participants were female and 31.1% were male. The number of usual residents per household ranged from 1 to 14 (mode 4, median 4). The number of visitors per household ranged from zero to 10 (mode 0, 1; median once zero counts removed was 2). Using the information provided, we ascertained that three generations or more were living under one roof in 72 houses (32.9%). Similarly, 17.8% (n=39) of interviewees stated unprompted there was at least one resident in their household on the government's waiting list for their own home. By summing the number of residents plus visitors, the total number of people living in the house on the day of interview ranged from 1 to 18 (median 5, mode 4). On that day, 18.9% (n=41) had eight or more people living in it.

Self-reported room utilisation for sleeping

The majority (68.5%) used multiple bedrooms as well as other spaces in the home for sleeping. Only 24.2% of homes accommodated sleeping arrangements exclusively in bedrooms. 117 households (53.4%) had at least one person sleeping in the lounge room not a bedroom. The number using the main bedroom to sleep ranged from 0-6, median 2, mode 2; second bedroom, 0-8, median 2, mode 1 and third bedroom 0-8, median 1, mode 1. Interviewees also self-reported the number of people sleeping in the lounge room: this ranged from 0-12, median 2, mode 1. Other locations for sleeping included the verandah and yard. For 211 households, we had sufficient data to determine the number of usual residents per bedroom using the ABS formula: ranging from 0.01 to 14 (median 1.5, mode 1). We also

considered the number of people living in the house on the day of interview (usual residents + visitors) with the number of bedrooms, consequently the number of people per bedroom on the day of interview ranged from 0.01 to 14 (median 1.7, mode 2). However, sleeping was not confined to bedrooms. Ninety-two (42.0%) participants indicated there were changes to where people slept from cold to hot time ('dry season' and 'wet season' respectively in the Kimberley). Among those immediate additional comments from 69 participants, this typically involved moving from one room to another such as everyone moving to the lounge room to save power using only one air conditioner, or moving to where a fan was, or moving out to the verandah. When asked where people usually slept during hot time, 152 respondents gave free text answers. Generally, these were grouped most often as 'outside' (for cooler temperatures or breeze) or the lounge room (affordable air conditioning). Occasionally, respondents mentioned that sleeping outside was to 'give the aircon a rest'. Others indicated the bedrooms were used but this was less common as a response. When asked about where people usually slept in cold time, 129 respondents gave free text answers. The most typical answer was 'bedroom' or a combination of 'bedroom and lounge' with verandah less commonly mentioned than for the hot time options. One respondent described 'lounge with visitors' and another a campervan as well. Our data also showed that the number of usual residents per bathroom ranged from 1 to 14 (median 4, mode 4).

Visitors and household experiences

Regarding the experience of visitors, 60 respondents (27.4%) indicated the percentage of time they had visitors in 2020 was different to normal: the percentage of the time those having extra visitors ranged from 1 to 100% (median time 10%, mode time 10%). In response to the question about the duration of visits, 79 (36.1%) respondents indicated less than a week (such as a few days or day visits) however 58 (26.5%) replied about two weeks whereas another nine (4.1%) replied three months or more. Half had visitors for more than 20% of the time. Reasons indicated by half or more of respondents were funerals (76.7%); holidays (65.8%); sorry time (54.8%) and sports (51.6%) although community events (44.3%), lore (35.2%) and temporary housing of someone evicted were also mentioned (34.3%).

Strategies for overcrowding

To explore this sensitive issue of overcrowding, interviewers listened carefully to household participants and stopped writing down answers whenever requested. This sometimes happened when the reality of current experience was expressed. At their busiest time in 2020, household numbers ranged from 1 to 50 (mode 6, median 7). For 12.9% of households, this was 15 or more but was greater for those who declined their answers being coded. This section of the survey elicited the greatest concern by participants that Nirrumbuk would be forced to disclose identifying answers. Nirrumbuk team members promised participants that none of the household information in this research would be given to any government agency, leading to sharing stories of reprisals following past disclosure by tenants or neighbours of outstanding repairs, plumbing needs or overcrowding to the government as their landlord. The gravest concern we heard was that, rather than triggering action to restore a safe and healthy home, these details were distributed across government departments including child protection agencies to

blame Aboriginal families living in the home and to remove children or other immediate consequences.

When asked to give some of the reasons people left the property, responses included returning home after cultural reasons or conflict. However, it was experienced by some of the interviewers that the reasons could be shame from fighting, tension and escalating challenges. Other reasons included cultural avoidance necessary to respect intergenerational relationships between people determined through marriage. Half (50.2%) agreed they could tell people it was time to go although 25.1% could not and 19.6% could only sometimes.

When asked what stops the head tenant or another person from asking visitors to leave, 162 respondents gave answers referencing family obligations such as 'love for kids – they can always stay' 'they'll camp outside somewhere instead', 'I don't say don't stay – they are welcome', 'you can't be hard, we never grew up to be mean', 'it's difficult to say there's no room when the house is already overcrowded so how can people be asked to leave? It gives people a purpose when they are lucked out'. However, some responses indicated there were community policies such as 'New rule here about who can get houses ... never mind who grew up here' meaning that people needed to be able to stay in their community to access resources restricted only to traditional owners (TOs). Some suggested those who were drunk or anyone not helping out with buying food/power or cleaning could be more easily asked to leave.

Sense-making and meaning of 'overcrowding'

Most (84.0%) indicated that overcrowding was something they had not thought about or noticed.

Interviewers continued to respect when participants wanted 'off the record' conversations by not writing down their answers. This meant underreporting of experiences which we had managed in quantitative analysis as missing data. In one community for example, fourteen houses required major renovation and repair however none of the residents in these houses were provided alternative accommodation over many months and had to be absorbed into already overcrowded homes in the community. Because of this lack of planning by government, a lot of people were crowded in even fewer houses.

When asked what did they notice, when they thought a house was overcrowded, 163 (74.4%) gave an answer that could be written down. Common answers included 'strain on toilet and shower' including toilet and drain blockages, 'fighting', 'rubbish' 'when food goes down' or 'food finishes quicker', 'sickness' 'cleaning up more often' 'messy, noisy, conflicts' 'unsettled moods' and a lot of mess and too much rubbish. Many people also indicated a lot more cooking and cleaning, and 'wanting our own space'. When asked to describe overcrowding in their own words, 133 (60.7%) did so. Common responses included 'too many people for toilets', 'no room to move', 'very tiring', 'people just lying around', 'debt and fighting', 'non-stop work', 'no sleep' and 'not enough beds'. When asked some of the important things to consider when living in large groups, 165 participants gave comments that were mostly practical such as having a clean house, organising common spaces, being clean, and having enough towels and food. One hundred and seventy-nine (n=179) participants answered our question to understand the 'biggest pressure'. Their responses related to security, namely personal

security, food security and interpersonal safety as well as access to power and water. Actions to manage their pressure problems were offered by 154 participants. These clustered around communication, empowerment, setting boundaries with family members and assertiveness. Other suggestions addressed money, income and better-paying employment options. Housing maintenance regimens adhered to by the government manager of social housing in remote communities needed to improve.

When asked to select the best of two options about house size for their community, the majority (65.8%) selected *'It was better to have a bigger house and bigger rent, and less overcrowding in the future'* while less than a third (27.9%) selected *'It was better to have a small house and small rent knowing that there would be times of over-crowding'*.

CNOS as a standard for housing density

To introduce the concept of the CNOS,⁵ interviewers read a summary of its requirements as a standard. In response, 64.8% agreed it was a good way to measure housing occupancy in Aboriginal households. However, additional comments included 'Canadian standards sound respectful' but recognised the reality that there were too many people for the available housing stock. Participants told us that efforts to meet this occupancy standard would mean little without landlord commitment to maintenance and repairs. Participants also offered practical ideas such as the choice of outside kitchens or access to private spaces with cupboards and locks.

Responding to COVID in households and communities

If someone had COVID and needed to *isolate* for 14 days in the participant's house, more than half (53.4%) selected 'extremely' difficult from the five-point Likert scale. When then asked the same question for a COVID contact who needed to *quarantine* for 14 days in the same house, 64.8% selected 'extremely' difficult. If their community had a cluster of COVID cases, 33.8% indicated that isolation and quarantine could not be done at scale; 30.6% of respondents perceived it could be done; 21.5% selected 'perhaps' and 12.3% were not sure.

Next steps

There was a positive sentiment from participants indicating interest in follow-up consultations to learn about the impact of the project, and developing a better health model for the region. Participants themselves asked if future conversations could be scheduled for the 'cool time' and invited us back. An example of feedback from the community at the ground level was *'... no one has ever offered us this opportunity before. It's really valuable the way that Nirrumbuk works with us'*. In many of these locations, daily temperatures were already high with the arrival of the 'wet season' yet people responded positively. It was also evident that COVID-19 vaccination campaigns took precedence over survey completion. Offered to every household as part of our philosophy of 'no survey without service', self-referral to Nirrumbuk for follow-up was specifically requested by 40 participants (18.3%), suggesting a high immediate perceived need and comfort in requesting.

Discussion

With our other essential service partners, we believe this is one of the most important projects undertaken in the Kimberley during the

COVID-19 pandemic: it was designed and led by Aboriginal experts in environmental health, producing timely insights for risk communication and health messaging especially once WA re-opened for interstate travel. Undertaking this research built capacity within our Aboriginal community-controlled organisation for research design and trustworthy data sovereignty. Our long-term goal is to ensure that future communicable disease pandemic planning, response and recovery in the Kimberley incorporates a contemporary Aboriginal-led understanding of housing, overcrowding and culturally safe ways of sharing knowledge about preventable diseases. It is important to acknowledge that Nirrumbuk's pre-existing service model for household support begins by identifying disease transmission routes in homes and, together with the entire household, taking action on their priorities to reduce disease risk including hardware repairs, supporting tenants to report building defects to landlords and/or modifying their individual health-related behaviours. Three findings from this research are highlighted below.

First, most immediately, learning that 53.4% of households would find it 'extremely' difficult if someone in their house had COVID and needed to isolate for 14 days prompted better public health planning. From March 2020, Nirrumbuk had contributed its expertise to regional pandemic response. We brought our insights to all partnership meetings. From March 2022, the decision of the WA Government to re-open state borders needed mitigation strategies for community transmission.⁷ Household occupancy pressures were poorly understood by government decision-makers. Across Australia, Aboriginal leadership was key.⁸ Large numbers of people had moved voluntarily during the first months of 2020 or were encouraged to move back to remote communities, traditional homelands, country or outstations. Food was not always available and changes to public health orders were confusing.⁹ We found that three generations or more were living under one roof in one-third of houses (32.9%). In about 20%, there was at least one occupant unable to leave the home because they were on a waiting list for their own. During the pandemic, data from California showed the percentage of overcrowded houses in neighbourhoods predicts rates of COVID hospitalisations and COVID mortality.¹⁰ Poor housing and enforced overcrowding is a communicable disease health hazard, confirmed in other studies elsewhere in America, the UK and Canada.¹¹⁻¹⁴ This global pandemic shifted the policy focus towards immediate individual public health responses including vaccination yet the importance of housing as a social determinant of Aboriginal and Torres Strait Islander peoples' health remains unfinished business for government. High COVID vaccination rates won't outpace these social determinants.

Second, 'overcrowding' meant an interpersonal dynamic between people living in the house, not a quantitative number or ratio (as typically assumed by governments). When participants were asked what they noticed when they thought a house was overcrowded, common answers included 'strain on toilet and shower' including toilet and drain blockages, 'fighting', 'rubbish' 'when food goes down' or 'food finishes quicker', 'sickness' 'cleaning up more often' 'messy, noisy, conflicts' 'unsettled moods' and a lot of mess and too much rubbish. Interviewers explained the basics of the CNOS and how it was calculated. We found that 64.8% agreed the CNOS was a valid basis to determine acceptable and healthy housing occupancy in Aboriginal households however CNOS could not be achieved in their current circumstances controlled by government. Its achievement

seemed both unrealistic and fraught with concerns about reprisals if actual household occupancy was ever disclosed to government authorities. Interest was expressed for more conversations in the future with Nirrumbuk about these sensitive issues.

Third, our philosophy of reciprocity as a community-controlled organisation throughout this research yielded operational benefits. Interviews enabled householders to ask questions especially about public health terms and strategies. We advised about disease transmission and could distribute cleaning packs. Forty participants (18.3%) also requested follow-up environmental health services, confirming high immediate need for support and satisfaction with confidential services offered by Nirrumbuk. Participants wanted to continue knowledge sharing, future research and better health in partnership with communities. Our experience also engendered a sense of continuing pride and direct involvement in research led by a community-controlled organisation. This research also developed internal research capacity and engaged Aboriginal staff in data collection, management and sovereignty.

Although this project was never designed to be representative epidemiologically, it has created a foundation for continuing community-controlled research enquiry. We embraced this approach to ensure we could consult, partner, listen and learn. We earned invitations from the community to return and continue the discussion about overcrowding, COVID-19 and health generally. From this first experience, we have also discussed ways to improve survey design in future as an organisation committed to continuous quality improvement. From the data we collected in 2021 in the field, it was not possible to calculate precisely whether the CNOS standard was breached for each household. We have secured additional funding to address this limitation. We would like to distinguish this work as an Aboriginal community-controlled project from two other recent research studies. One conducted in three regional and remote communities in Queensland over five months in 2022 obtained 82 household interviews.¹⁵ The other conducted over one month in 2019 in the Northern Territory obtained 36 household interviews.¹⁶ We reaffirm our commitment to Aboriginal-led research and evaluation, acknowledging as authors our country affiliations.¹⁷

Conclusions

Household overcrowding increases the risk for many diseases of which COVID-19 is the latest. This research has harnessed our presence as an essential community-controlled service to explore highly sensitive issues and experiences of 'overcrowding' with which we already changed pandemic responses in the region. We learned that 'overcrowding' may not be an appropriate expression to use when communicating health risks with remote Aboriginal communities. 'Overcrowding' is not perceived by Aboriginal people as a simple number of people or household density ratio. Rather, 'overcrowding' occurs upon experiences of tension, conflict or pressure irrespective of numbers. Whilst visiting families might stay for a weekend, individuals might stay for a weekend but also for much longer. We also heard about experiences of overcrowding that came from poor waiting list management for public housing. Most households had no capacity to safely isolate a person with COVID-19. Most households also had no capacity to safely quarantine a person who is a close contact of a person with COVID-19. Only one-third

indicated that their community could manage isolation and quarantine at scale if there was a cluster of COVID cases in that community. This research enhanced our capacity as a trusted Aboriginal community-controlled environmental health service to lead innovative environmental health research and contribute to COVID-19 public health planning and response. Nirrumbuk used these findings to pivot quickly in 2022 when the WA border was relaxed and COVID transmission spread throughout remote regions.⁷ As importantly, communities trust us to continue co-designed research, commending our approach as an Aboriginal community-controlled organisation to research reciprocity. We are currently assessing the application of CNOS in greater depth with a smaller number of households. Aboriginal-led research such as ours in continuing partnership with communities must address housing density as a social determinant of health.

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Ethical statement

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Conflict of interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Nirrumbuk Environmental Health and Services reports funding provided by Ramsay Foundation for this research.

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