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A qualitative study of the influence of childcare on high antibiotic use in a multicultural, lower socioeconomic community

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Abstract

Introduction This qualitative study explored factors associated with childcare affecting antibiotic use in a lower socioeconomic, culturally diverse community. Little is known about the knowledge, attitudes and behaviours of parents and childcare providers that influence childhood antibiotic use at a local level.

Methods Parents and childcare workers from the Fairfield Local Government Area of Sydney were sampled to maximise diversity, including English speakers and those preferring other languages. Recruitment was hampered by the COVID-19 epidemic. Semi-structured telephone interview transcripts were thematically analysed.

Results Eighteen childcare staff and 20 parents were interviewed, drawn from 7 participating childcare services. Interview findings were grouped under two major themes: the culture regarding antibiotic use and the regulatory and administrative environment of childcare centres. Interview responses demonstrated interaction between themes and provided insights into the knowledge, attitudes, and behaviours of staff and parents/carers in relation to antibiotic use.

Discussion The determinants of high use of antibiotics in childcare in a multicultural community are multifactorial, inter-related and complex. The two interacting themes, cultural factors and regulatory/administrative environment, appear to capture these determinants. The study did not find evidence of explicit pressure on parents to obtain antibiotics for children. However, the themes described appear to work together to increase antibiotic prescriptions. Parents and care providers expressed beliefs in antibiotic efficacy for numerous conditions, contrary to scientific knowledge and public health messaging. Respondents were not aware that antibiotic use in the region is unusually high. The regulatory and administrative context determining childcare attendance during illness does not seem to overtly drive antibiotic seeking behaviour. However, parents expressed an imperative to work which appeared to drive adoption of strategies perceived to shorten illness, including using antibiotics. These factors may also increase doctor attendance seeking certificates to facilitate early return to childcare. Doctor attendance may increase antibiotic prescriptions. These issues deserve further investigation which should also include doctors' perspectives.

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Introduction

This qualitative study explored the views of childcare workers and carers about antibiotic use in a lower socioeconomic, culturally diverse community in New South Wales, Australia.

Australia has one of the highest rates of antibiotic use in the world [1]. The Fairfield Local Government Area (LGA) of Sydney had the second highest national rate of antibiotic use among children aged 9 years and younger, at 154,713 prescriptions per 100,000 children in 2017 [2]. Despite consistently high rates of antibiotic use in communities similar to Fairfield [2], little is known about the knowledge, attitudes and behaviours that influence childhood antibiotic use at a local level.

The region of approximately 200,000 residents has relatively lower levels of educational attainment, lower median income, higher levels of unemployment and higher ethnic diversity compared with the rest of Australia. 59% of residents were born overseas compared to 33.3% for Australia [3].

The Fairfield Health Alliance is a coalition of stakeholders including primary care, tertiary care and local government which work together to understand and improve the health of residents. Through discussions with stakeholders and residents, childcare was identified as a potential influence on antibiotic use locally. There was concern that policies and practices of childcare services and staff may encourage antibiotic-seeking behaviour in parents or carers for sick children. However, there has been little research in Australia that has investigated the influence of the childcare sector on antibiotic use in children.

Childcare, also known as early childhood education and care, includes home-based care, centre-based care such as preschools and kindergartens, family day care and outside school hours care [4]. Childcare services develop policies that set out criteria for excluding and readmitting children with illness.

As the economic and social participation of parents and carers has changed in the past two decades, more children are attending out-of-home childcare services [5]. If childcare services were found to be a driver of antibiotic prescribing, interventions within this sector could be an opportunity for reducing unnecessary antibiotic use in children.

Patient and parent expectations of antibiotics have been identified as an important factor in unnecessary prescriptions in Australian primary care [6]. Parents of young children may expect antibiotics based on a perception that antibiotics will shorten illness or prevent deterioration of childhood infections. Pressure felt by parents to return to daily activities such as work, school or daycare after a child's illness is an important driver for antibiotic requests [7]. People with lower levels of education, aged younger than 65 years, and who speak a language other than English are more likely to request an antibiotic to treat symptoms of an upper respiratory tract infection. Socioeconomic status and ethnicity have previously been observed to be associated with variations in knowledge, attitudes and behaviours regarding antibiotic use [6]. This association is supported by Australian data which indicated rates of antibiotic dispensing in children aged 0–9 years were higher in areas with lower socioeconomic status in major cities [2].

One study of parents and carers in the United States [8] found that parental knowledge was a more important predictor of antibiotic seeking for children attending daycare than centre exclusion policies. Studies of daycare staff in Canada [9] and the United Kingdom [10] found erroneous beliefs about antibiotic efficacy in viral infections. The latter two studies reported evidence that staff advised attendance at general practices for upper respiratory tract infections.

Some Australian studies have explored the views of culturally and linguistically diverse adults in relation to antibiotic use. Issues identified include misunderstanding the purpose of antibiotics and causes of antibiotic resistance, and lack of translated resources [11]. Increased access to antibiotics from the country of origin and normalisation of this use may be factors promoting increased use of antibiotics in culturally diverse communities [11–13].

Methods

Study aim

The aim of this study was to investigate the knowledge, attitudes and behaviours of childcare workers and parents/care givers regarding antibiotic use in children attending childcare in a culturally and linguistically diverse community.

Recruitment

The initial phase of this study recruited participants who preferred to speak English in the interviews. An extension of the research included participants who preferred to speak a language other than English in the interviews. Recruitment occurred between 31 August 2021 and 28 January 2022 during the COVID-19 pandemic. The Fairfield Local Government Area was one of the principal regions affected by the delta variant outbreak which had a major impact on childcare attendance and participant recruitment.

Childcare centres

All 125 accredited childcare services identified in the geographic area of interest were approached by letter and email using a purposive strategy aimed at maximising diversity of organisational types and geographic location across the region. Recruitment for the initial phase of the

study occurred between 31 August 2021 and 26 October 2021. Recruitment for the extension study occurred between 18 January and 28 January 2022. Informed consent was sought from interested centres.

Childcare staff

Directors were asked to promote the study to staff members. Informed consent was sought from staff who expressed interest.

Parents/carers

Parents/carers were recruited through posters in childcare centres and emails sent by participating centres. For the extension phase, professionally translated resources in Vietnamese, Arabic and Assyrian were developed. Bilingual research officers obtained informed consent where required.

Data collection and management

Semi-structured telephone interviews were administered using interview guides which were developed collaboratively by the research team (see parent and childcare worker interview guides in supplementary files 1 and 2). Interviews typically lasted approximately thirty minutes and were recorded and professionally transcribed. All consenting childcare workers elected to be interviewed in English. All English interviews were carried out by IH who is an experienced, male, primary care researcher. After training by IH, bilingual researchers carried out interviews with parents/carers in the selected languages. Interview recordings were professionally translated to English. A $30 e-shopping voucher was provided to all interviewees in acknowledgement of their contribution to the research.

Data analysis

A thematic analysis was conducted using the approach proposed by Braun and Clarke [14]. Nvivo (v12.0) software was used to support the analysis. In vivo codes were developed initially which were then structured around the interview guide. A process of inductive and deductive analysis was used to abstract the initial codes to concepts, categories and themes. Conceptual diagrams and whiteboard maps were used by three investigators (AK, CWMT, IH) in weekly meetings to explore the meanings of emerging codes, concepts and themes. Two meetings of the whole research group were held during analysis to discuss interpretation of the data, and to confirm investigator consensus regarding the findings.

Research ethics approval

Two approvals were obtained from the South Western Sydney Local Health District Human Research Ethics Committee. The main study (Ref: 2021/ETH01223) recruited participants who preferred to speak English in the interviews. The second approval (Ref: 2021/ETH11488) extended the research to include participants who preferred to speak a language other than English in the interviews.

Results

Participating childcare centres

Of 125 childcare services approached, eleven childcare services expressed interest in participating in this study and seven services gave informed consent to proceed. Characteristics of participating services are shown in Table 1.

The participants

Eighteen childcare service staff and 20 parents were recruited for interviews. Table 2 shows their demographic profiles.

Interview results

Thirty-eight semi-structured interviews were conducted with 18 childcare staff and 20 parents. The topic was one of importance to the participants who generously shared their views during a time of high community anxiety

Table 1 Characteristics of the participating childcare services

Service Type	Suburb	NQS Rating	Long Day Care	PS/KG -School Based	PS/KG - Stand alone	After/Before Hrs School Care	Provides Vacation Care
Council run	Bonnyrigg	Meeting NQS	Yes	No	No	No	No
Council run	Bonnyrigg Heights	Exceeding NQS	Yes	No	No	No	No
Council run	Fairfield West	Exceeding NQS	Yes	No	No	No	No
Family Day Care	Wetherill Park	Working Towards NQS	No	No	No	No	No
NGO run	Cabramatta	Meeting NQS	No	No	Yes	No	No
Private	Fairfield	Working Towards NQS	Yes	No	No	No	No
Private	Fairfield	Meeting NQS	Yes	No	No	No	No

Note1: PS = Pre-school; KG = Kindergarten

Note2: The National Quality Standard (NQS) sets a high national benchmark for early childhood education and care and outside school hours care services in Australia. The NQS includes 7 quality areas that are important outcomes for children. Services are assessed and rated by their regulatory authority against the NQS, and given a rating for each of the 7 quality areas and an overall rating based on these results

Table 2 Summary statistics of the demographic profiles of participants

Attributes	Staff (*n* = 18)	Parents (*n* = 20)
Mean age (years) (SD)	46.0 (10.4)	37.7 (7.6)
Age groups		
20–30 years	2	4
31–40 years	9	8
41 - 50 years	6	7
51–60 years	1	1
Gender		
Female	17	17
Male	1	3
Country of Birth		
Australia	8	4
Vietnam	3	7
Chile	2	-
Iraq	2	6
Cambodia	1	-
Lebanon	1	1
Malta	1	-
Indonesia	-	1
Kuwait	-	1
Ethnicity		
Chilean	3	1
Vietnamese	3	7
Iraqi	2	6
Assyrian	-	2
Syriac	-	2
Armenian	-	1
Chaldean	-	1
Italian	2	-
Cambodian	1	-
Greek	1	-
Lebanese	1	1
Maltese	1	-
Uruguayan	-	2
Argentine	-	1
Indonesian	-	1
Kuwaiti	-	1
Serbian	1	-
Undeclared	3	-
Main language spoken at home		
English	8	-
Vietnamese	3	7
Arabic	2	4
Spanish	2	4
Assyrian	1	2
Greek	1	-
Khmer	1	-
Armenian	-	1
Chaldean	-	1
Bahasa (Indonesian)	-	1
Interview Language		
English	18	12
Arabic	-	4
Vietnamese	-	4
Highest Level of Education		
University degree	8	8
TAFE– Cert/Diploma	10	8
Completed high school	-	4
Employment status		
Full-time employment	18	6
Home-maker	-	10
Unemployed	-	2
Part-time employment	-	1
Voluntary	-	1
Occupation		
Childcare worker	10	-
Early childhood teacher	7	-
Family Day Carer	1	-
Home-maker	-	7
Accountant	-	2
Admin staff	-	2
Aged care worker	-	1
Banker	-	1
Church volunteer	-	1
Economist	-	1
Education administrator	-	1
Electrician	-	1
Hair dresser	-	1
Lab sample collector	-	1
Student (TAFE)	-	1

related to the COVID-19 pandemic. The Fairfield Local Government Area was one of the most affected areas during the delta variant COVID-19 outbreak in 2021, with one of the highest infection rates in the country. The salience of the issues raised by the participants, whose lived experience with health is within the context of a region with long-standing socioeconomic disadvantage was well captured by one of our participants, a 47-year-old father (ID PC04):

> *I have my fears.... fears that antibiotic prescription is getting harder and harder so instead of my child recovering in 2 or 3 days he might need a week or may be two [to recover] without antibiotics. I will have to stay at home without work for all that period and in this case we let the body defend itself against the infection and it might fail to defend itself. I am concerned that the outcome of your project and if health people develop 'public awareness program' that will make the prescription of antibiotics in Fairfield almost impossible. You are concentrating on this area and this scares me. My wife and I can't afford to get sick because we have small children; who will look after them? Who will take the children to school? My wife and I can't afford to get sick.*

Two major themes emerged from interviews regarding factors that influence the use of antibiotics in children attending childcare centres in Fairfield LGA:

- The antibiotic culture.
- The regulatory and administrative environment of childcare centres.

These two themes interacted and provided insights and understanding of the knowledge, attitudes, and behaviours of staff and parents/carers in relation to antibiotic use.

Theme 1: 'antibiotic culture'

'Antibiotic culture' describes parental and worker beliefs, attitudes, and behaviours around the use of antibiotics in children attending childcare.

Cultural context of fFairfield LGA

Childcare staff and parents observed that residents, particularly the first-generation migrants, were strongly influenced by knowledge, attitudes and practices from their country of origin.

> *…. when I was a kid, I was not in Australia. I was in a different country where we used antibiotics very freely. That's why we get used to it and it's just like a daily activity and when you get used to something you don't see any risk in it. [PC05–40 years, female, tertiary educated, and admin staff]*

Participants reported pressure could be exerted by other parents and relatives who believed that an antibiotic could provide benefit.

Many parents were in dual-income families with both caregivers working. Childcare was an important enabler for work and income resulting in pressure to return children to childcare as soon as possible.

Perceptions of infectious diseases and their management

Some of the participants from both the staff and parent groups expressed the view that antibiotics should only be used for bacterial infections as determined by a health care professional.

However, participants also listed circumstances which may overrule that principle. These included sites of infection such as ear, lung, throat, tonsil, sinus infections, and gastroenteritis.

> *My daughter always gets ear infection and suffers from earache all the time and without antibiotic she will never recover. Her doctors checks her ears and if he finds red inside which means she got bacteria inside he always asks me to give her antibiotics for a week. [PC09–31 years, female, diploma, and homemaker].*

Other factors were cited including duration of illness, presence of a green/yellow nasal discharge and severity of infection. 'Long duration' was perceived to imply that the child's immune system had failed and they required antibiotic support. Coloured nasal discharge was understood to mean that the viral illness turned bacterial infection with time.

> *We try to not to get him antibiotic but just Panadol. Sometimes that is not enough. The fever is up and down, up and down, and runny nose turns green or yellow. Then if an antibiotic is given you can sense the day after that it's actually working. [PC10–55 years, male, tertiary educated, and banker].*

There was a view that level of education could affect people's view of antibiotics.

> *Well, the Fairfield LGA is relatively lower socioeconomic status, and I think the perceptions and understandings and probably the education level of those parents or those people in this area are probably driving that trend (of high antibiotic use). [PC15–33 years, female, secondary, and homemaker]*

Attitudes towards use of antibiotics in children

Many participants were unaware that antibiotic use in children was relatively high in the region.

> *I can't explain this (why the data show that that Fairfield LGA has a very high rate of antibiotics use). At my centre - no reflection of that [FF0901– 36 years, female, tertiary, and early childhood teacher].*

Childcare worker views appeared to be influenced by administrative considerations. They supported antibiotic use when recommended by a doctor and supported by a properly labelled bottle and a medical certificate indicating it was safe for the child to attend the centre.

For parents the key issues driving antibiotic use were perceptions of benefit to the child. A secondary but important driver was the pressure parents felt to go back to work to avoid financial loss.

> *I don't want to use antibiotics for my child, but the main reason I have to use is that it helps my baby recover quicker. Of course, if she doesn't take antibiotic, it will take her two weeks to recover. If she take antibiotics, it will take her one week to recover and we both need to go to work and we have to use antibiotics. [PC05–40 years, female, tertiary educated]*

When my child is very sick and my GP refuses to prescribe, I have no choice other than going to a different doctor who will prescribe; no dramas. This has happened with me personally, I have done this. [PC04–47 years, male, TAFE, and Electrician]

Participants proffered these views as possible explanations for high rates of antibiotics use in Fairfield. They added that doctors' behaviour may be contributing either through adherence to the practice style in the doctor's country of origin or through pressure from parents.

…. and they (doctors) are just too free with their antibiotic prescriptions. Some parents request and they prescribe. [FF0904–45 years, female, diploma in childcare, and childcare worker].

Theme 2: regulatory and administrative environment in childcare centres

Childcare worker participants were aware of the regulatory and administrative environment in their centre. They cited sick day management policies applicable to their centre, including when attendance was allowed, appropriate monitoring of the child and appropriate procedures for dispensing medications.

Factors affecting sick child attendance

Childcare worker participants regarded a temperature of 38 °C as the cut-off point for attendance at the majority of the centres. Most parents reported that a child with mild fever or runny nose was usually allowed conditional attendance provided the child would be picked-up if requested.

Childcare worker participants reported considering their own assessment of severity, the risk of transmission to others, duration of the illness and duration of antibiotic use. Parents and staff noted stricter application of policies during the COVID-19 pandemic. Some commented that the pandemic may have driven increased doctor-visits.

Usually by day three, they've got a few doses (of antibiotic) into them. Yeah. We let them come to our centre. We don't have a rule that says "You cannot attend our centre unless you've got a high temperature". COVID changed a lot of that. We are more cautious now allowing sick children in. [FF2604–52 years, female, tertiary, and early childhood teacher]
I see that a lot of children do get it [antibiotics] prescribed, yes. Especially now, since COVID I do feel that the rise has begun. Parents do give it to their children for the common cold, yes. [FF 7102–36 years, female, TAFE, and childcare worker]

A doctor's clearance certificate seemed to override all the regulatory and administrative guidelines put in place by the childcare centres. If a parent brought in a sick child (or a child on an antibiotic) with a doctor's certificate stating they were well enough to attend the centres and were not a health-risk to others, the centres could not refuse attendance.

If a parent comes with a sick child using antibiotic and has a clearance or a certificate from a doctor saying that this child can attend and was not infectious to others then we don't have any other option but to allow the child to attend if that is what is desired by the parents. [FF0901–36 years, female, tertiary, and early childhood teacher].

Both participant groups highlighted family circumstances as an influencing factor on attendance. Parents and carers were sometimes in a desperate situation due to casual work or important appointments. Despite sympathy for the parents, childcare worker participants reported feeling constrained to comply with exclusion policies as it would be unwise to allow the child to attend putting others at risk.

Oh, dear. Well, it's very hard [a parent working casual and missing payment]. Yeah. Very hard. Unfortunately, we have to go by our policy. If the child is unwell, then actually not allowed to be on the premises, unless they've got a clearance from the doctor. So unfortunately, we wouldn't be able to take that child. [FF1002–53 years, female, TAFE diploma, childcare worker].

Some parent participants, though sympathetic, supported this approach by centres.

My opinion is that the centre will have to make a stronger stand. We're saying 'no'. Like tell this parent, "Look, there are so many, so many, so many other children. If the selfish parent let the infected child going, what about if the infectious disease spread to all the other kids." [PC10–55 years, male, parent, tertiary educated].

The parents commented that those parents might then visit doctors and put pressure on them for antibiotics and/or a clearance certificate and might even visit multiple doctors with the same request.

I love and cherish my children more than anything else in life. When the child is very sick and my GP refuses to prescribe [an antibiotic] I insist as I know my children. If still the doctor refuses I have no

choice other than going to a different doctor who will prescribe; no dramas. This has happened with me personally, I have done this. (PC04–47 years, male, secondary, and electrician]
Yes, there is potential for doctor shopping [if the parents strongly believe that antibiotics is needed]. [PC15–33 years, female, tertiary, and economist]

Some parents were not primarily motivated by childcare centre sick day management policies. They appeared to follow their own beliefs in determining attendance during illness with their child's well-being as their main consideration.

If the child is sick then keep him at home and don't bring him to the centre. Simple. The infection spreads from the child to other children so they say don't bring the child. Flu for example is contagious and can be transmitted from child to child. [PC06–39 years, female, tertiary, and church volunteer]
I always keep my child at home whenever he feels unwell, I won't send him to school. If my child has just come to school, and they say he is not okay, I will take him home. Because I just stay at home and take care of my child, I will take him home so that he does not affect other children and he is much safer as well. [PC18–41, female, tertiary, and homemaker]

Managing emergent illness

Most childcare workers reported similar policies in relation to managing a child who got sick while in attendance. After initial observation, carers would be called to pick-up a deteriorating child. Unwell children would be isolated.

Oh yes. So, we just move them to another room and they will stay there with an educator until the parent arrives. So that's on our policy. We are now more cautious during this pandemic period. [FF1001–40 years, female, tertiary, and early childhood teacher]

Most parent participants were aware of these practices at the childcare centres. They added that they were happy with those arrangements, as that was the best the centres could do and that ensured their child received proper health care on time.

I cannot say for sure what other parents do, but I'd obviously pick up my child because what other choice do you have. If the staff say that they can't look after your child because he's sick, then you'd have to pick up the child. If they advise that take your child to a doctor and get checked out I will do that. I will need a doctor's certificate to take him back. I think the most parents will do the same. [PC17– parent, 26 years, female, high-school educated]

Most centres required children who were sick not to attend. Some children were reportedly allowed to attend predominantly driven by parental need provided there was a doctor's clearance stating that the child was not a health-risk to others. Despite guidelines for staff dispensing medications, the consensus was that a child on an antibiotic should stay at home as it was seen as evidence of significant infection and risk to other children. Some staff noted the impact of medicine dispensing on their already busy workload and the risk of medication errors.

Discussion

Publication of antibiotic prescribing data in the Australian Atlas of Healthcare Variation [2] led to conjecture within the Fairfield City Health Alliance about reasons the area had the second highest rate of antibiotic prescription in children aged 9 years and younger in Australia. Anecdotal reports suggested parents/carers experience pressure from childcare staff to procure antibiotics to expedite return of their children to childcare. This study was conceived to explore whether this pressure could be a significant driver of high prescription rates.

Parental and childcare worker responses suggested that this simplistic narrative does not reflect reality. A more complex set of influences seemed to be important and may provide opportunity to influence antibiotic use. The two over-arching themes, antibiotic culture and the regulatory/administrative environment, appeared to capture these influences and their interactions.

'Antibiotic culture' was the term used to capture beliefs, attitudes, and behaviours around the use of antibiotics in children attending childcare which parents and workers described. Our finding that these factors influenced the health seeking behaviours is similar to the results of a literature review conducted in France [15]. There was agreement between childcare workers and parents that antibiotic use should be minimised, and that antibiotics were ineffective for the common childhood viral illnesses. This suggests public health messages aimed at reducing antibiotic use had been understood. However, there was also agreement between the two groups of respondents that there were many situations which overrode this general principle.

The overwhelming priority for parents was safety of the child. If parents/carers perceived danger to the child, they viewed antibiotics as necessary. Certain common conditions (e.g. ear infections, tonsillitis, chest infections) were understood as possibly bacterial and thus, requiring antibiotics. Antibiotics may be thought advisable in scenarios where the child had a fever, coloured

nasal discharge, persistent illness, or seemed very unwell. There was a strong belief that antibiotics could shorten an illness even if the child would recover without them. Taken together, these exemptions provided a contrary narrative to public health messages and appeared to shift expectations towards use of antibiotics.

There was a general view among parents that for cultural reasons antibiotic use was more acceptable in Fairfield. Interestingly, both parent and childcare worker participants also did not agree with the notion that antibiotic use was high in the region. It seems plausible that the measured high rate of use in the region had been normalised as the common experience of respondents.

This antibiotic culture, shared between parents and childcare workers, sets a context for the negotiation between these two groups around the administrative and regulatory factors governing attendance of children at childcare when ill.

Childcare workers were aware of workplace policies regarding the exclusion of unwell children. How children were determined to be unwell in practice was less clear, other than when they had a measured temperature above 38° C.

Children attending childcare centres are two to three times more likely to contract infectious diseases compared to the children cared for at home [16]. Parent participants in our study seemed to be aware of this higher risk. In one qualitative Australian study [17] parents attributed increased infection rates to contaminants at childcare centres and unhealthy lifestyles of some of the children attending which included unhealthy diet, poor hygiene and lack of physical activity. In our study the parents expressed frustration at the attendance of some apparently unwell children. Many reported keeping their children at home if they were unwell, but this did not imply that they only returned when fully recovered.

Both groups were very aware of the need for parents to go to work. Parents reported a strong desire for children to return to childcare as soon as possible. Childcare workers reported negotiating this pressure difficult as they sought to balance awareness of parental needs against infection control responsibilities.

The childcare workers were aware of the policy environment of their workplaces regarding exclusion of sick children. To them, protecting others from an infectious child was a very important priority. One factor that could override their own assessment was a doctor's certificate. The doctor's certificate was frequently raised as a powerful factor which could overrule other considerations and enable return of a child to childcare, sometimes despite their misgivings. There was a suggestion that desire for a certificate could drive doctor attendance, sometimes in cases where the clinical condition of the child may not have otherwise triggered attendance.

Factors which increase attendance at doctor appointments may increase antibiotic prescription rates. Research on doctor behaviours reports factors affecting antibiotic prescription including antibiotics awareness, initial training and practice style, particularly for upper respiratory tract infections [15]. Doctors may assume parental expectations of antibiotic prescription and be more likely to prescribe.

This study makes an important contribution by focussing on a culturally diverse and lower socioeconomic community. Fairfield is one of the most culturally and linguistically diverse local government areas in Australia. The major local language groups are Vietnamese (20.4%), Arabic (7.9%), and Assyrian (6.7%), Cantonese (4.3%), and (Khmer 3.6%).[3] A pragmatic decision was made to focus on the three most common language groups due to funding limitations.

Strengths of this study include a relatively large and diverse purposive sample. Inclusion of the views of parents and childcare workers provided a nuanced understanding of the issues. Another strength was the inclusion of participants whose preference was to be interviewed in languages other than English which further diversified the data obtained.

This research took place during the height of the COVID-19 pandemic in Australia. Respondents noted that there was greatly increased tension and rigour regarding management of respiratory tract symptoms in children and compliance with infection control principles. Challenges around employment and earning were also heightened. Access to general practice was more difficult. These factors were reported to have increased pressure in managing illness and childcare attendance and may have affected responses in this research.

During this time attendance at childcare was reduced by lockdowns and quarantine procedures, preventing distribution of recruitment materials by childcare staff to parents/carers. Parents/carers were not allowed to enter the centres at drop off and pick up times reducing the number who saw promotional posters. Centre administrators were not comfortable allowing a member from the research team to wait at the centre and approach parents/carers with the request to participate in this study. Research staff could not engage face to face with potential participants. These factors made recruitment more difficult.

Our preferred method of data collection was through focus group interviews as they facilitate exchange of viewpoints and permit discussion on diverse opinions expressed by participants. Due to COVID-19 restrictions, it was not possible to bring study participants together at the same venue. We opted to conduct one-on-one semi-structured in-depth telephone interviews and that may have affected the quality of data.

Conclusion

This study suggests that complex factors affect the high use of antibiotics in children attending childcare in a multicultural community. The findings suggest that two themes, cultural factors and regulatory/administrative environment, and their interaction capture these determinants.

We did not find evidence of explicit pressure on parents by childcare services to obtain prescriptions of antibiotics for children. However, the themes appear to work together to possibly increase antibiotic prescription. The culture around antibiotics seems to support beliefs in their efficacy for conditions that may not warrant use, and there is a perception that use in the community is not high or unusual.

The regulatory and administrative context determining childcare attendance during illness does not seem to overtly drive antibiotic seeking behaviour. However, the imperative for parents to attend work appears to increase the likelihood of adoption of strategies perceived to shorten illness, including the use of antibiotics. These factors may also drive attendance at doctor appointments to seek certificates that will facilitate earlier return to childcare. Doctor attendance may increase the prescription of antibiotics.

These findings deserve further investigation, and we recommend that GP perspectives should be included in future studies.

Abbreviations

KG	Kindergarten
LGA	Local government area
NQS	National quality standards
PS	Preschool
TAFE	Technical and further education

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12889-025-22725-0.

Supplementary Material 1

Supplementary Material 2

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Author contributions

AK conceived the research idea, led the research team and wrote the final article based on a previous project report by IH. IH wrote the ethics approval, recruited the participants, carried out and analysed the interviews and wrote the initial project report. AK, IH and CWMT designed and implemented the project and met regularly to analyse the results. RQ and AS were involved in project design and implementation, met to provide feedback on results and provided feedback and final sign off on the manuscript.

Funding

South Western Sydney Local Health District provided funding for this research. AK, CWMT and RQ carried out this research as part of their roles as employees of South Western Sydney Local Health District. Funding was used to employ IH as a research officer, develop project resources and provide vouchers in appreciation to research participants.

Data availability

Qualitative data on which this research is based may be available to bona fide qualitative researchers through direct application to the corresponding author. Access to data is controlled in order to protect the privacy of participants and the community.

Declarations

Ethics approval and consent to participate

This research was carried out in accordance with ethical consents 2021/ETH01223 and 2021/ETH11488 from the South Western Sydney Local Health District Human Research Ethics Committee. All participants gave informed consent to participate in this research. This research complies with the World Medical Association Declaration of Helsinki regarding ethical principles for medical research involving human participants.

Consent for publication

Not applicable.

Competing interests

AK, CWMT and RQ carried out this research as part of their roles as employees of South Western Sydney Local Health District which also provided funding for this research. Funding was used to employ IH as a research officer, develop project resources and provide vouchers in appreciation to research participants.

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