Using a multidisciplinary, multi-method and collaborative research design to investigate the health communication power of the early childhood sector

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Accepted for publication 25th July 2022 by the Australasian Journal of Early Childhood

Abstract

This paper details the research design of a multidisciplinary, multi-method, collaborative research project investigating health communication from the experiences of the early childhood education (ECE) sector during the COVID-19 pandemic. With the rapidly evolving pandemic, the ECE sector was instantly tasked with expanding their required health practices to prevent the spread of infection . It was evident that the sector needed a system to communicate health advice in a timely, consistent and effective manner. Founded on a partnership model based on 'knowledge brokering' theory (Dagenais et al., 2015), this project demonstrates the value of a multi-disciplinary research team collaborating with stakeholder organisations to investigate how COVID-19 health information traversed through complexities of organisational layers and diverse communities of families and staff. Detailing our data collection and analysis protocols, we conclude by outlining how our innovative research design is generating actionable and impactful recommendations for both the ECE and health sectors.

Introduction

A core aspect of early childhood education (ECE) professional practice is the adoption of pro-active measures to protect the safety, health and wellbeing of children, their families and educators. In Australia, all approved early childhood (EC) services must comply with the National Quality Standard in the area of Children's Health and Safety (Australian Children's Education and Care Quality Authority (ACECQA), 2020). It requires services and educators to implement health and hygiene practices that will minimise disease transmission amongst children, staff and families. As EC services regularly deal with infectious diseases such as influenza and gastroenteritis, the sector always had a foundational knowledge-base in public health protection measures. This included an understanding of technical language and procedures, and an institutional culture around infectious disease prevention and control (Minniss et al., 2013) that equipped the sector's response to disease outbreaks.

Since early 2020, in the context of the rapidly evolving COVID-19 pandemic, the ECE sector was continuously tasked with expanding their required health practices to include up-to-date, evidence-informed interventions to prevent the spread of this infectious disease. Consequently, EC services and educators became increasingly reliant on sourcing, consuming and implementing COVID-19 health advice. It was expected that this health information was communicated to their staff, families and children in a way that was relevant and meaningful for the context- and population-specific interests and needs of their communities (European Commission Directorate-General for Education Youth Sport Culture, 2021).

Emerging research on how the ECE sector responded to the pressures of COVID-19 illustrates how educators and services across the world proactively implemented public health advice to protect the health of young children, families and staff (Van Laere et al., 2021; Visnjic-Jevtic et al., 2021). For example, Pramling Samuelsson et al (2020) detailed how EC services in Sweden and Norway followed health advice related to hygiene, social distancing, and the exclusion of sick children and staff, and took measures to communicate this advice to families. In Korea, EC services were directed to follow public health guidelines and were supported to maximise learning while implementing social distancing and other COVID-19 prevention measures (Yu et al., 2021).

Importantly, little information currently exists about how educators and services undertook and experienced the process of accessing and communicating COVID-19 information. Available information points towards systemic challenges related to the sourcing, communicating, and implementing of critical health communication practices. Some studies have reported that educators felt unsupported and underprepared to effectively deal with COVID-19 related demands and implementation challenges (Park et al., 2020; Pramling Samuelsson et al., 2020). Like the general population, educators had a much greater exposure to health information than ever before, and the sector was confronted with an overwhelming array of official and informal communication sources relating to this pandemic (Finset et al., 2020; Logan et al., 2021). Yet in Australia and elsewhere, educators expressed frustration that there was little ECE context-specific advice on how to keep themselves, children and families safe (Bryant, 2020; European Commission Directorate-General for Education Youth Sport Culture, 2021; Hashikawa et al., 2020). Commentaries also suggested that educators found that even when context-relevant information was available, it was difficult to understand and implement (Bryant, 2020).

It was within this context that the Australian Government, via its Medical Research Futures Fund (MRFF), announced an initiative to fund research into the processes and challenges associated with population-specific health communication. With the aim of generating recommendations that would improve health communication, the Government recognised that effective health communication plays a central role in informing communities about the nature of an infectious disease, the risk to populations and the need for infection prevention strategies that can reduce the spread of the disease. Effective health communication has been demonstrated to allay fears and uncertainties, and promote behaviour changes that minimise the risk of infection and serious illness (Finset et al., 2020). Yet it was evident that the Australian ECE sector did not have an organised system that could facilitate widespread communication of timely, consistent and effective communication of this vital public health information (Bryant, 2020).

It was clear that what was needed was a communication system for the ECE sector that established an efficient flow of accurate and trusted information which would ultimately reduce the stress and confusion around health messaging and implementation. In this paper, we describe our theoretical and methodological approach to a research project in

which we engaged closely with sector-wide stakeholder partners (educators, services, peak organisations, and families) to build a comprehensive picture of COVID-19 health communication experiences, barriers, and enablers. Through presenting the study design, we identify the potential impact of multi-disciplinary, collaborative approaches by identifying the connections between our study aims and desired outcome, and our theoretical and methodological approach.

Study aim, research questions and desired outcome

Designed by a multidisciplinary team of researchers who specialised collectively in early childhood education, systems and policy, public health, epidemiology, health communication, and social and cultural diversity, the project's aim was captured in the following vision statement:

> *This project will capitalise on learning derived from the experience of the early childhood education (ECE) sector during the COVID-19 crisis, to develop a Best Practice Model of health communication to be used whenever population-level health information needs to be communicated rapidly, accurately and effectively to families of young children and their educators (Degotardi et al., 2020).*

Specifically, the project was designed to answer the following questions:

RQ 1. What health information is received, sought, and communicated by the health and ECE sector in order to minimise the chance of infection of families and staff?

RQ 2. How does the ECE sector communicate health information to staff, families and children?

RQ 3. What attitudinal, behavioural and demographic characteristics are associated with process and effectiveness of the health knowledge translation and communication?

RQ 4. How can the Australian Government and the ECE sector work effectively together to harness the knowledge broker potential of the ECE sector for families with young children?

This study, which is still in progress at the time of writing, recruited and generated data across 2021, when much of Australia was impacted by lockdowns, human contact restrictions and strict infection controls. With a reach of over 700,000 families nation-wide,

the Australian ECE sector had the potential to maximise the effectiveness of health messaging and public health interventions to curb the spread of infectious diseases across the country. EC services were at the front-line as a provider of essential support to families, especially for those working in health and emergency services, and most remained open even when schools were closed during the height of the pandemic. As Jane Hunt, the CEO of the Front Project, declared "Never before has the sector's value to children, working families, businesses and broader society been so clear, and experienced first-hand by so many people." (The Front Project, 2020, p. 3). With this in mind, our desired outcome was to develop a Best Practice Model together with a set of guidelines to enable Government health agencies to partner with the ECE sector to facilitate effective and rapid communication of health interventions during the pandemic and in any future health crises.

Theoretical framework: A partnerships model of knowledge brokering

Recent advances in health communication have supported the use of community-based 'knowledge brokers' who collaborate with and act as an intermediary between health agencies and community end-users to communicate relevant information to both parties (Bornbaum et al., 2015; Dagenais et al., 2015; World Health Organisation, 2017). The success of a knowledge broker relies on their ability to understand and translate evidence-based health information, and on their relationship with, and understanding of, the needs, goals and interests of both health agencies and their stakeholder community (Bornbaum et al., 2015; Dagenais et al., 2015). Because of their in-depth knowledge of their stakeholder communities, community organisations such as EC services have the potential to be highly effective in responding to health information needs during health emergencies. This potential was recognised early in the pandemic by the National COVID-19 Health and Research Advisory Council (2020), who emphasised that it is highly beneficial for health agencies to partner with community groups that can connect and communicate with diverse communities. The ECE sector, through its commitment to provide a duty of care for children and manage risks to staff, is an invested stakeholder with the knowledge and community-wide reach to be an effective health communication knowledge-broker to families and communities (ACECQA, 2020; Steering Committee for the Review of Government Service Provision, 2020). Yet there is a complexity in how health communication traverses the ECE sector.

While some health brokering agencies assume a direct mediating role between a health authority and the stakeholder population, the ECE sector has multiple organisational levels which each receive and translate information to their specific stakeholder community. The model we designed to represent this multi-level, partnership health communication approach is outlined in Figure 1 below. At the 'peak' level, the sector comprises national professional organisations, employer organisations, and workforce or policy advocacy agencies. These organisations support the next sector level – EC services and their staff - by providing the information required to support educators, families and children. An effective ECE health information brokering system therefore needs to consider how evidence-based health information is efficiently communicated and translated at multiple points across the different organisational levels. An effective health information knowledge brokering system incorporates two-way, mutually respectful communication that considers the evidence-based information alongside practice and community-oriented goals and concerns of the target populations (Dagenais et al., 2015; Leask & Hooker, 2020).

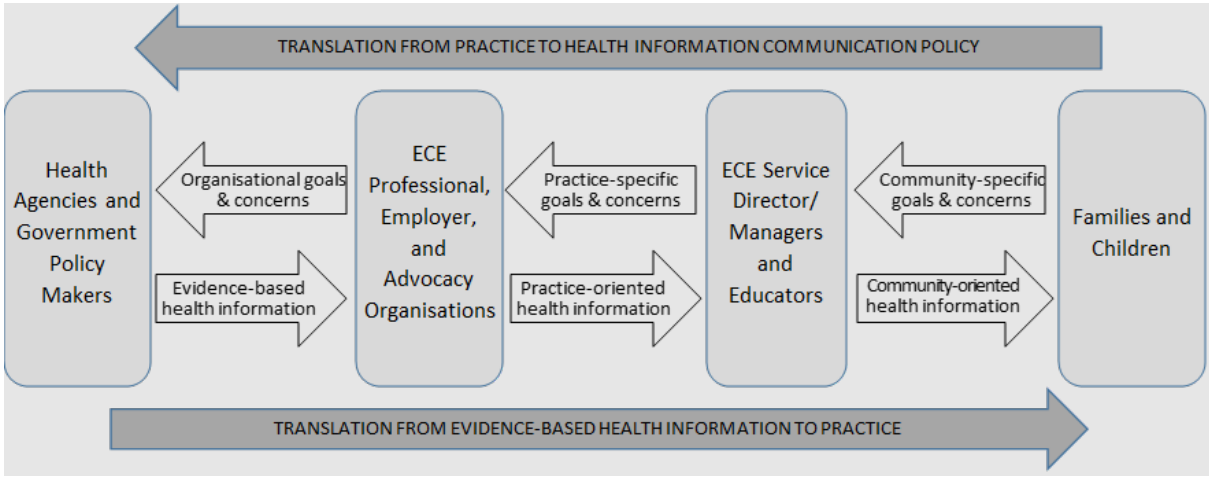

Figure 1: A partnership model of health communication to and through the ECE sector.

Project design

This project employed a mixed-method design, comprising three data sources which generated both quantitative and qualitative data. This approach was chosen on the basis that this design is effective in examining complex systems, and because the data collection and analysis methods can generate both generalisable broad, and in-depth localised, findings (DeCuir-Gunby, 2011). Mixed method designs also enable researchers to compare, triangulate and integrate research findings across different data sources and contexts, thus

adding both conceptual validity and contextual depth to the new understandings generated by the research (Creswell & Plano Clark, 2017). The data sources for the project were:

i) *health communication documents* produced and disseminated by the health and ECE sectors in response to the COVID-19 pandemic;

ii) *survey data* collected from a) educators working across a range of EC services (e.g., preschools/kindergartens, long day care and family day care); and b) from families using these services;

iii) *interview data* with a) senior/executive staff of peak organisations in the ECE, health and community sectors regarding the development and dissemination of health information, and b) service-level directors/managers, educators, and family members in a targeted selection of EC services.

Each of these sources are elaborated in the data generation methods section below.

Stakeholder collaboration

A central feature of the project design was the collaborative contribution of stakeholder organisations from the ECE, health and community sectors who partnered with us in the design and implementation of this study. The benefits of academic-stakeholder organisation research collaborations have been recognised for some time in the health discipline. While academic-stakeholder collaborations do occur in early childhood research (for example, see Degotardi et al., 2019; Waniganayake et al., 2019) the nature and benefits of such collaborations are less often explicitly documented. In the health discipline, 'community-engaged' research has been recognised as an effective avenue for academics and community members to work together to solve real world problems and collectively work towards translational outcomes (Balazs & Morello-Frosch, 2013; Jacquez & Svindin, 2020). Such collaborations capture meaningful stakeholder participation across a range of research activities including research design, data generation, interpretation, and dissemination, and have been argued to enhance the "rigor, relevance, and reach" of translational research (Balazs & Morello-Frosch, 2013, p. 10). At the design stage, stakeholders and researchers can work together to ensure that the research design and methods are applicable to and will generate data that is useful for the target community (Jacquez & Svindin, 2020; Slattery et al., 2020). Stakeholder collaboration can facilitate participant recruitment, and, once data is collected, involvement also supports the meaningful and context-specific interpretation of

the findings. In sum, collaborative research designs gain power from the "knowledge and methodology expertise of researchers with the local expertise and lived experiences of community members to collaborate for change" (Jacquez & Svindin, 2020, p. 6).

In the present study, we invited influential ECE advocacy, workforce and health organisations representing the needs and concerns of EC services, educators, children and their families, to partner with us in this research. They were State and National EC and Health organisations who were directly or indirectly involved with supporting the ECE sector during the COVID-19 pandemic, and therefore had a direct interest in strengthening health messaging. As our stakeholder partners, they were also well placed to contribute meaningfully to the research design and the interpretation of the findings. With considerable reach and influence nation-wide, and as our partners, they could take evidence-based research findings to the attention of government, and collaborate with ECE and health agencies to implement effective public health messaging in the future.

With the aim of incorporating active collaboration across the entire research process, we incorporated four stakeholder meetings into our research design. These two-hour meetings, held via Zoom, enabled the research team and stakeholder representatives to collaborate at each key phase of the project. The purpose and content of each meeting is represented in Figure 2:

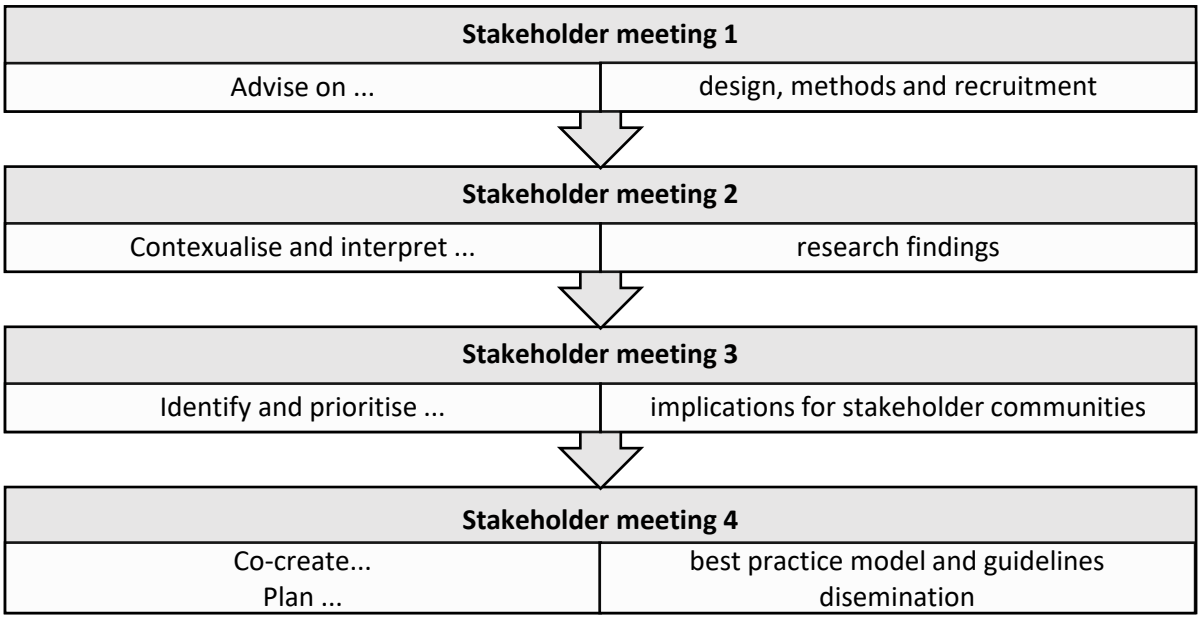

Figure 2. The design, purpose and content of the stakeholder organisation collaboration meetings.

The active involvement of our stakeholder partners at data sharing meetings reinforced the benefits of our 'community-engaged' approach. Partner representatives were able to contextualise the emerging findings with reference to their organisations' health communication practices, experiences and priorities, as well as those of their own stakeholder populations. By working collaboratively with the research team, partners could identify the implications of the findings for themselves and their communities, and generate meaningful and actionable recommendations.

Ethical considerations

The design protocol of the study was assessed and approved for its ethical merit by the Macquarie University Human Research Ethics Committee. Drawing on the principles of the National Statement of the Ethical Conduct of Human Research (NHMRC, 2018) the project design was assessed in terms of its means of recruiting participants and obtaining informed consent, its identification and moderation of risks and burdens, and the measures taken to ensure confidentiality and data security.

A further ethical consideration related to our commitment to ensure the project generated meaningful and useful data for our varied stakeholder partner organisations. These organisations collectively represented a diverse mix of interests of the ECE and health sectors including both home and centre-based services. The findings being generated also have implications for children and families as well as employers and employees. As researchers we were mindful of these multiple stakeholder perspectives, and proactively consulted with our partner organisations at each phase to ensure that these interests and needs were being addressed by our research methods.

Data generation methods

Four data-generation component methods were employed, capturing the varied health communication processes and experiences across the multi-level health communication model. We summarise these methodological components below.

Component A: Health communication document analysis

The focus of this component was on health communication documents collected from publicly available websites and organisation-internal sources (communications provided by nine of our partner organisations). Documents included health policies and guidelines,

health advice (e.g., FAQs, videos, factsheets, children's books, newsletters, posters) and internal communication (newsletters, emails, briefings) directed at diverse audiences including health professionals, EC organisations, service providers, families and children. Publicly available materials were sourced from national and state health authorities (e.g., health departments, Safe Work Australia), and EC organisations (e.g., Early Childhood Australia, United Workers Union, Community Early Learning Australia) and were published between March 2020 and September 2021 (covering the initial and several subsequent waves of the COVID-19 crisis). Internal communication documents were provided by partnering EC peak organisations and service providers or were identified by 'Elite' informants (see Component C-1 below) during their interviews.

Data analysis

A total of 825 documents were identified; 630 were external (i.e. publicly available) and 195 were internal (i.e. supplied by partners). Relevant information from all sourced documents was extracted (e.g., title, document type, source organisation, jurisdiction, producing sector, audience, language, and release and access dates). For in-depth analysis, 49 documents (external *n*=33, internal *n*=16) were purposively selected to ensure that documents covered a matrix of diverse producers (EC, health, culturally and linguistically diverse (CALD) and Indigenous groups) and audiences (peak organisations and national providers, frontline EC staff, and families and children).

The detailed document analysis was conducted by four experienced members of the research team using NVIVO qualitative data analysis software (version 12) in a stepwise, iterative and deductive approach adopting a combination of techniques including readability analysis (Ferguson et al., 2021; Stossel et al., 2012), content analysis (Hsieh & Shannon, 2005), numerical complexity analysis (Apter et al., 2008; Joram et al., 2012) and linguistic discourse analysis (Harvey & Adolphs, 2013). For all coding, conflicts or discrepancies were resolved through the discussions between coders.

Analysis progressed through the following four stages:

1) calculation of readability scores (Flesch Reading, Gunning Fog, Flesch-Kincaid, SMOG and readability consensus score) across all documents to gauge the document's accessibility for audiences with different literacy levels (Ferguson et al., 2021; Mac et al., 2021).

2) identification of all relevant instances and types of health information (e.g., hygiene, distancing, symptoms, testing);

3a) mapping against the six core features of the World Health Organisation (2017) *Strategic Communications Framework for effective communications* to appraise key discourse and linguistics features of effective communication (e.g. actionable advice, relevance to target audience, understandability of language used);

3b) linguistic directness analysis (direct, indirect, hedged) of WHO Framework codes *actionable, relevant, understandable,* in order to assess language used to motivate audiences to act in relation to health advice (El-Dakhs, 2021);

4) numerical complexity and comprehension analysis (e.g., frequency, infection percentages, risks) and the use of elaborative features (e.g., visuals, analogy, graphs) (Apter et al., 2008).

Component B: Survey of EC educators and families

Survey respondents were recruited via email, newsletters and social media invitations that were distributed by several of our partner organisations to their stakeholder communities. Each communication contained a link to the survey, which started with a page detailing the ethical and informed consent requirements of the survey. Consent was indicated if the respondent chose to progress to the next page.

The content of the survey was informed by current literature on responses to COVID-19 (Asia-Pacific Regional Network for Early Childhood, 2020; Dryhurst et al., 2020; Harris & Dakin, 2020), and the research teams' and partners' expert knowledge of the needs and concerns of the ECE sector. Survey formats were designed to gather information from a diverse sample of service directors/managers, educators, and families across the full range of EC services in Australia. Information was gathered about health information that was provided by and accessed from their EC service, as well as from other EC sources, including professional development programs. The survey also collected information on the use of a wide range of other sources of health information, such as from government websites, television and radio, social media, and family and friends. For all these possible sources, we asked respondents to rate the frequency of accessing health information, how easy it was to understand the information, and how confident they were in the accuracy of the

information. We used a continuum of 1 to 10 for rated scales, which is recommended for subjective questions, such as 'happiness' (Kalmijn, 2013) rather than limited options such as 'very happy', 'somewhat happy' or the use of 5-point agree-disagree scales. A second section of the survey gathered information on actions or changes in behaviours that were implemented in response to the health information that was received. Additional questions for directors/managers and educators were included about their experiences and perceived effectiveness of communicating health information about COVID-19 to children and families.

In order to investigate individual differences in ease of understanding, confidence in the source of knowledge, and effectiveness of the communication as rated by participants, all surveys collected demographic information (e.g., qualifications, language spoken at home, Australian Indigenous background) as well as attitudinal characteristics (e.g., risk perceptions, personal efficacy, and pro-sociality) shown in previous studies to predict individual differences in behavioural response (Dryhurst et al., 2020). The format of the survey comprised: selection from a closed list of options (yes/no responses), open text responses, and numerical ratings.

Data Analysis

Survey responses were received from 257 families and 401 ECE professionals. Qualitative coding used an inductive analytical approach (Denzin & Lincoln, 2017) of open text responses, and identified patterns and themes related to enablers and constraints of effective health communication and the implementation of health advice. Quantitative analysis examined the percentage of respondents who accessed each source of information and the mean ratings of regularity of access, confidence in the information, and effectiveness of the health messaging. Further regression analysis examined whether confidence and perceived effective of the communication predicted ease of implementing behaviours in daily practice and perceived ability to communicate with families and children. We also examined whether these predictions were moderated by demographic factors (e.g., position, qualification). Finally, path analysis examined the direct and indirect prediction of attitudinal characteristics to perceived implementation effectiveness.

Component C-1. Elite interviews with EC and health organisations

Elite interviews were conducted to determine i) which health information was received, sought, and communicated by the health and ECE sectors in order to minimise the chance of

infection of families and staff, and ii) how the ECE sector communicated health information to staff, families and children. Elite interview (Dextern, 1970/2006) methodology is grounded in the qualitative theoretical perspective of social constructionism. The aim of elite interviews is to gather specialised knowledge and views (Dextern, 1970/2006), in this case relating to the development and dissemination of health information to EC services. Interviews were conducted in July 2021 with 20 representatives from key health or community agencies (n = 4) and EC (n = 12) organisations with combined reach across Australia (e.g., EC peak bodies; EC employer organisations, and advocacy organisations with a remit for providing professional support for EC services). Organisations were identified through purposeful sampling based on the Investigator team's and research partners' extensive knowledge of the diverse Australian ECE, health and community sectors. Senior executives (e.g., CEOs) within these organisations were contacted by a research team member via email or phone, and invited to participate or nominate another person in the organisation. These interviewees had responsibility for the development and dissemination of health information material to EC services, staff and / or the family and community, during the COVID-19 pandemic.

The 16 interviews (lasting up to 1 hour) were conducted via video link and audio recorded, with 20 individuals (two participants from two organisations were interviewed together). The semi-structured interviews were guided by overarching questions related to: the type of health information they had access to relating to COVID-19; their roles, responsibilities, strategies and approaches in sharing this health information within their organisation; factors that influenced this communication; and suggestions for improving future communication of health information. Transcribed audio files were sent to participants for member checking. The returned 'approved' transcripts constituted the data for analysis.

Data Analysis

Analysis followed an inductive analytical approach consisting of coding and thematicising (Denzin & Lincoln, 2017). Initial coding of two transcripts (1 health; 1 ECE) was conducted by one author using NVivo. This identified 137 unique codes. Three authors then checked the coding until there was agreement. Two transcripts were then double-coded by the three authors, using the existing codes to check consistency. There was strong agreement on these codes (Kappa coefficients of 0.67-0.87 which is fair-excellent). Coding was continued

by one author, with additional codes continuing to be added as required. At the end of coding, a total of 206 codes were identified. Next, the codes were organised into themes using a hybrid inductive-deductive approach.

Component C-2. Case study interviews in targeted EC services

Collaborating with our research partners, and in response to findings from the Elite Interviews, we targeted 14 services to determine the localised health messaging experience of each EC service and their families. Case study sites were selected to include representation from each state and territory, from metropolitan and regional locations and from a mix of management types including for-profit and not-for-profit, as well as standalone and home-based services. This included services located in Aboriginal and Torres Strait Islander (ATSI) and Culturally and Linguistically Diverse (CALD) communities, as well as services that enrolled children with additional educational needs, identified in the literature to face health information barriers (Finlay & Wenitong, 2020; Taveras et al., 2006). Interviews were conducted by a local Research Assistant (RA) to facilitate open communication, navigating potential barriers and reducing travel costs. Each RA was inducted to the project through a detailed case study protocol package and supported by a member of the research team. The RAs engaged in face-to-face conversations or Microsoft Teams facilitated meetings with service Directors, educational/room leaders and educators (n=50), and families (n=18), in generating data on:

- the localised relevance and use of the COVID-19 health information, including any barriers in accessing this information;
- the extent to which the COVID-19 health information aligned with the National Quality Standards, including Quality Area 2 - Health and Safety;
- how critical information was shared and discussed with staff and families, including how information may have been tailored to address diverse communities;
- the resources educators received or accessed to support the children and families in their EC service.

Data Analysis

Interviews were audio-recorded and transcriptions were returned to enable participants to check, amend and / or make additional comments. Each RA also wrote an initial descriptive

analysis of the case study after the interviews by completing a summary sheet regarding the common themes which the researchers also referred to as contextual data. Analysis of the final 'approved' interviews were based on best practices of qualitative analysis and built on the coding analysis of the C-1 Elite Interviews. Two members of the research team coded the interview data according to the 206 codes generated in study C-1. An extra 189 codes were generated inductively in study C-2. Final analysis included both researchers agreeing on the group categories or 'key themes' that identified health messaging needs, barriers, enablers and impacts.

Discussion

In this paper, we outline the theoretical and methodological approach to a study designed to learn from the COVID-19 health communication experiences of the ECE sector to harness its potential as a capable and efficient communicator of health information to the sizeable population of staff, families and children that it serves. The involvement of a multidisciplinary team that encompassed early childhood, public health, epidemiology and health communication expertise enabled the development of a partnership health communication model that reflected the complexity of knowledge transfer between sectors and across multiple organisational levels. The theoretical model informed the design of the multi-method data generation and analysis components, thus ensuring that meaningful data about the process and effectiveness of COVID-19 health communication was generated across each organisational level (see Figure 3).

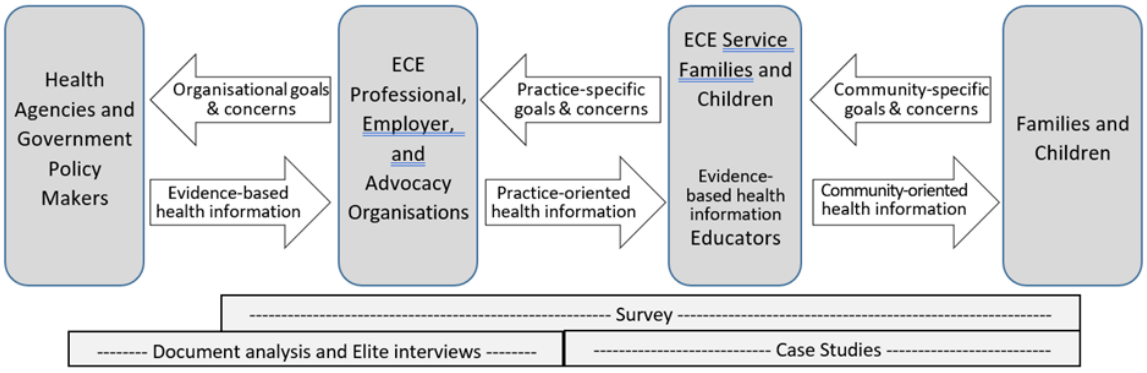

Figure 3: Data generation component mapping onto the health communication model.

By focussing on the entire ECE health communication system, the theoretical model also ensured that our multi-method design addressed each research question (RQ). The document analysis addressed RQ 1 and 2 by shedding light on the content of the communicated health information and how it was communicated across the model. The elite interviews and case study data provided information sought and communicated (RQ1) and processes of health communication, including the efforts taken by individuals and organisations, and the challenges that were experienced (RQs 2 & 3). The survey generated nation-wide responses reflecting the process of communication (RQ2) and also answered RQ 3 by enabling an analysis of relationships between the health communication processes and attitudinal, behavioural and demographic variables.

Our theoretical model has remained central to addressing the final research question - How can the Australian Government and the ECE sector work effectively together to harness the knowledge broker potential of the ECE sector for families with young children? The resultant rich and varied data, which were regularly discussed by the whole research team, enabled members from different sub-teams to interrogate the findings from their own discipline perspective and the whole team to draw generalised conclusions. The model continuously reminded us to view the data and findings from each component as 'parts of the whole,' and the resulting triangulation and synthesis of findings across data sources saw the emergence of common themes which added strength to the validity and contextual relevance of the findings (Creswell & Plano Clark, 2017; DeCuir-Gunby, 2011). These findings are currently supporting the development of a best practice health communication model and associated recommendations that we hope will inform and benefit individuals and organisations across the Australian ECE health communication system.

From the co-design of methods, through the recruitment, interpretation and implication phases, the participation of our stakeholder partners was critical to the "co-learning and co-production" that Balza and Morello-Frosch (2013, p. 9) refer to as "democratized knowledge production." We are encouraged that our collaborative approach will generate impactful recommendations which, if applied, will establish a strong and effective EC health communication brokering system. By collectively identifying and contextualising barriers and enablers across all levels of the model, we are confident that the project will develop both localised and scalable ECE health messaging pathways and tools which will enable a

rapid and effective national communication strategy that can be deployed during any future public health crisis that threatens the health and wellbeing of young children, families and their educators.

Conclusion

In Australia and internationally, research agendas are increasingly encouraging community engagement as a means of generating impactful research outcomes. The Australian Research Council (2019) defines engagement as "the interaction between research and research end-users outside of academia, for the mutually beneficial transfer of knowledge technologies, methods or resources." In this methodological paper, we have sought to demonstrate the value of engagement with 'research end-users' as well as with different academic disciplines and associated research methods. Our methods support the process of effective knowledge mobilisation (David et al., 2016) between academic disciplines and community sectors, and thereby maximising the possibilities of translating findings into meaningful policy and practice during a public health crisis. Ultimately our collaborative approach is raising mutual awareness and generating productive relationships between the health, ECE and academic communities, which we hope will lead to co-producing a model to meaningful change in public health communication that will benefit the Australian community.

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