

# *A Delphi Study to identify strategies to mitigate the adverse impact of COVID-19 on children under the age of five in Wales*

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## ABSTRACT

The COVID-19 global pandemic has caused widespread impact on education across all settings and contexts, including early childhood education and care (ECEC). In Wales, it is estimated that roughly three-quarters of children under the age of five (c.155,000 children) were impacted by the closure of ECEC settings. While literature is still emerging on the long-term impact of the pandemic on children under five, little research has explored the potential strategies to mitigate these adverse impacts. This research project used the Delphi method to investigate what experts and ECEC practitioners believe are the most effective strategies to mitigate the adverse impact of the pandemic on children under five, using Wales as a national-level case study. Between May and September 2021, three consecutive surveys were distributed to study participants, who were identified as ECEC experts ( $n=39$ ). Furthermore, alongside the traditional Delphi study a one-off anonymous online survey was also sent to the wider ECEC practitioner community in Wales ( $n=378$ ). The dominant theme within the strategies suggested by the study participants was the importance of high-quality play experiences. The importance of universal provision and quality support for practitioners and families was also highlighted. These themes were dominant in both expert and practitioner groups,

despite consensus not being found between them. This paper presents and critically explores these identified themes, providing the foundation for replication and portability of this work and its outcomes to ECEC settings in other nations and jurisdictions.

**Keywords:** Early childhood education and care, ECEC, COVID-19, Delphi method, Wales

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### *Introduction*

#### *Impact of COVID-19 on children aged under five*

The importance of the earliest years of a child's life (between the ages of 0–8) cannot be underestimated, with longitudinal evidence suggesting that early experiences can shape children's outcomes into adulthood (Goodman & Sianesi, 2005; Lee, Kim & Terry, 2020; Melhuish, 2016; Sylva et al., 2010). Life experiences in the early years have been found to impact a range of broad developmental areas including educational outcomes (Michelmore & Dynarski, 2017), cognitive development (Lloyd & Hertzman, 2010), social development (Sylva et al., 2010) and neurological development (Shonkoff, 2016). Unsurprisingly, therefore, the importance of early childhood education and care (ECEC) has been well documented in its impact on children's cognitive, language and social development (Barnes & Melhuish, 2017; Burchinal et al., 2000; Camilli, Vargas, Ryan, & Barnett, 2010; Drange & Havnes, 2019; Eryigit-Madzwamuse & Barnes, 2014; Hansen & Hawkes, 2009).

The World Health Organization (WHO) formally declared COVID-19 a pandemic on 12 March 2020 (WHO, 2020). Upon this declaration, education institutions globally, across all settings and contexts, began the rapid shift to “emergency remote teaching” (Watermeyer et al., 2020; Crick, 2020; Siegel et al., 2021) alongside a range of adaptive measures to ensure the safety for learners and practitioners (Marchant et al., 2022a; Marchant et al., 2022b), as well as some level of “continuity of learning” (Marchant et al., 2021). The peak of school-closures worldwide was in April 2020 — at which point 199 countries had some level of school-based closures in place (World Food Program, 2020). Whilst young children were reported to be the least

affected by the virus itself (Wu & McGoogan, 2019) they experienced enormous disruption to their everyday experiences, and especially their education. This was particularly relevant for Wales, as it has been undergoing major education-system level reforms (Lewis & Crick, 2022; Knight & Crick, 2022; Welsh Government, 2023b), including the start of the new Curriculum for Wales from September 2022 onwards (Welsh Government, 2023a).

Recent approaches to ECEC policy and practice in Wales have been different to that in England, based on specific national context and priorities, as well as emerging international best practice and evidence (National Assembly for Wales, 2019; Welsh Government, 2022). It has been estimated that prior to the pandemic around 85,000 children aged five and under attended registered childcare and play settings (Care Inspectorate Wales, 2020), while approximately 70,000 attended education settings (Welsh Government 2020), producing a total of around 155,000 children. Based on mid-year population estimates for 2020, the population of children under age five was 160,000 (Office of National Statistics, 2020), suggesting that around 77% of all 0-to-5-year-olds experienced some form of ECEC provision in the year before the COVID-19 pandemic. During the pandemic childcare and play settings in Wales were asked to restrict provision to only vulnerable children and the children of critical workers between 23 March 2020 and 21 June 2020, while maintained school provision restricted access to school sites for approximately three months in summer 2020, then again for two months from January 2021 for children in the Foundation Phase (aged 3-7) (Welsh Government, 2021). Given that roughly three-quarters of children under five in Wales attended ECEC settings, it is likely that COVID-19 had a large impact on this demographic's access to, and experience of, ECEC.

Given the importance of ECEC, the closure of these settings has led to concern about the longer-term impact of the pandemic on children's development (Murray, 2020). A 2021 review of the available literature (Public Health Wales, 2021) indicated strong evidence that the COVID-19 pandemic has affected most aspects of children and young people's mental well-being, particularly for older children (RCPH, 2020), with the closure of educational and childcare institutions constituting one of the biggest disruptions to children and young people's lives. Research has shown an impact on young children across all areas of development, especially with significant ongoing changes

to the Additional Learning Needs (ALN) regime in Wales over the same period as part of the ongoing system-level reforms (Knight & Crick, 2022; Knight et al., 2023). For example, research that has explored the impact on physical development has found that the pandemic led to an increase of screen time and a reduction in active time in 2–4 year-olds (Dodd, Westbrook & Lawrence, 2020) Clarke et al. (2021) also found that pre-school children’s activity, screen time and sleep was disrupted. Within cognitive development, Davies et al. (2021) found that children who were able to attend ECEC settings during the pandemic showed a growth in their cognitive executive functions. In relation to social and emotional development, Egan et al. (2021) found that children missed social interaction with other children and parents described a negative effect on their children’s social and emotional wellbeing. Evidence has also shown an impact of continuing to attend an ECEC setting during the pandemic on speech language development whereby receptive vocabulary growth was found in those who continued to attend (Davies et al., 2021).

Furthermore, it has been argued that while the COVID-19 pandemic did not cause inequalities within the education system, it has widened them significantly (De Amorim et al., 2022; EEF, 2020; WHO, 2020). For example, Davies et al. (2021) found that children from less affluent backgrounds who lost access to ECEC settings during the pandemic were disproportionately disadvantaged.

### *Strategies to mitigate the adverse impact*

While a body of research is emerging documenting the impact of COVID-19 on young children, little work to date has investigated how to mitigate the adverse impact on this demographic. Atfeilf, Baldauf and Kispeter (2021) conducted a rapid evidence review looking at mitigating the impact of COVID-19 on education, childcare and social work and found ‘there was a lack of evidence generally on mitigations for specific groups, aside from teachers and some social care professionals’ (p. 8). In August 2020, the OECD produced a report on the impact of COVID-19 on children and put forward several policy recommendations to address the challenges faced by children during the pandemic. These focused around ‘ensuring access to good food and nutrition, and educational supports; and providing assistance and protection to vulnerable

children in need' (OECD, 2020, p.21). Furthermore, Araújo et al. (2020) looked at the impact of previous pandemics on children and highlights the importance of activities to promote healthy development, and in reducing toxic stress. Yet, work specifically looking at strategies to mitigate the impact of COVID-19 on young children, and specifically ones in ECEC settings, is currently lacking in the literature.

Therefore, this research sought to address this deficit, using Wales as a national-level case study and policy context, to identify what a group of international experts in the area of ECEC believed would be effective strategies to mitigate the adverse impact of COVID-19 on children aged under five in Wales. Furthermore, to validate these strategies, and to understand if there is a coherence of perspective across experts in ECEC, and those who work in the settings, we also collected the opinions of ECEC practitioners in Wales.

### *Research questions*

The research aimed to address the following two research questions (RQ):

- *RQ1:* What do experts believe are the most effective strategies to mitigate the adverse impact of COVID-19 on children aged under five.
- *RQ2:* Is there agreement between the expert and ECEC practitioner community in Wales on the best strategies to mitigate the adverse impact of COVID-19 on children aged under five?

This research was funded by the Welsh Government as part of their wider COVID-19 pandemic response and was explicitly intended to inform future policy and practice decisions on post-COVID recovery in ECEC.

### *Research Method*

A three-stage Delphi study was chosen for this study. The Delphi method aims to support group decision making by seeking expert opinions without face-to-face interaction between participants. Delbecq, Van de Ven, and Gustafson (1975) define the approach as:

...a method of systematic solicitation and collection of judgements on a particular topic through a set of carefully designed sequential questionnaires, interspersed with summarised information and feedback of opinions derived from earlier responses

Thus, the approach seeks to establish the extent of consensus or stability in the expert community. Analysis was based on non-parametric statistical techniques, as outlined by Schmidt (1997).

Alongside the third round of the Delphi study, a survey was also launched for the wider ECEC practitioner community in Wales. This aimed to gather their perspectives on this topic and to reinforce the potential policy outcomes from this work.

### *Delphi panel*

A cross-section of expertise, both across Wales, and internationally, was sought. Rather than focusing on a homogenous group, the selection of experts ensured that a range of perspectives were gathered. The participants were identified by the research team, as well as a research advisory group, as being experts in early childhood education and development through their contributions to research, policy and/or practice. Thus, in this context, we defined *experts* as those with acknowledged expertise in ECEC, either from publishing academic outputs on the topic, or who have extensive experience in working within these settings. Participants came from three distinct areas of expertise:

- i) academics (both national and international);
- ii) experts from national and regional organisations (Wales); and
- iii) expert practitioners (identified by the research team as having worked extensively in the area and holding a leadership position in ECEC) (Wales).

Cochran (1983) suggests that the minimum number for a Delphi panel is 10, stating however that there is a reduction in error and improved reliability with a larger group. Okoli and Pawloweski (2004) suggest that when the group is not homogenous, there should be 10 to 18 participants per area of expertise. As a result, the study aimed to recruit a minimum of 10 participants in each area (academic, organisation, practitioner) with an anticipated rate of attrition between the survey

rounds. 75 expert participants completed Round 1; 52 completed Round 2; and 39 completed Round 3. As is standard in Delphi studies, none of the participants were aware of the identity of the other participants.

An online questionnaire developed using *Qualtrics* was distributed to the participants via email. The results from the first survey (Round 1) informed the second survey (Round 2), and so forth.

### *Survey rounds*

#### **Round 1:**

The purpose of the first survey was to generate possible strategies that the expert participants believed could mitigate the negative impact of COVID-19 on children aged under five. The survey was launched in May 2021 and remained open for two weeks. The survey took the form of an open-ended ‘idea generation’ session. Participants were asked: ‘*Please suggest strategies, methods or practical steps that could be put in place to address or mitigate the adverse impact of COVID-19 on children under 5...*’. As informed by the literature on child development (Smith, Cowie, & Blades, 2003), the strategies were divided into four areas of development: cognitive development, social and emotional development, speech and language development, and physical development and health. This first round of the study elicited a large number of suggestions from participants for each area of development (103 strategies for cognitive development; 112 strategies for social and emotional development; 173 strategies for speech and language development; 149 strategies for physical development and health). These were coded iteratively by the research team. The focus of each strategy was identified along with the sector to which it should be aimed (i.e. school, family, community, finance and resourcing), this was determined by the research team by identifying the level in which the strategy, if actioned, would be carried out. Discussion among the research team resulted in similar strategies being grouped and summarised, contributing to inter-researcher reliability (Bryman, 2016). Table 1 shows the number of strategies that were presented to participants in Round 2. For reasons of parsimony, the decision was made to group the strategies by the target sector to which the strategy was aimed.

**Table 1: Breakdown of strategies presented in Rounds 2 and 3**

<i>Area of development</i>	<i>Sector</i>	<i>Number of strategies presented in Round 2</i>	<i>Kendall's W Round 3 (Experts)</i>	<i>Kendall's W (Practitioners)</i>
Cognitive development	Practice and pedagogy in ECEC setting	13	0.6	0.1
	Family and community	5	0.3	0.3
	Finance and resourcing	11	0.1	0.1
Social and emotional development	Practice and pedagogy in ECEC setting	21	0.1	0.1
	Family and community	9	0.1	0.1
	Finance and resourcing	9	0.1	0.1
Speech and language development	Practice and pedagogy in ECEC setting	33	0.3	0.3
	Family and community	12	0.2	0.1
	Finance and resourcing	10	0.1	0.04
Physical development and health	Practice and pedagogy in ECEC setting	25	0.2	0.3
	Parents and families	17	0.1	0.2
	Society and the outdoors	5	0.1	0.2
	Finance and resourcing	20	0.2	0.01

### **Round 2:**

The strategies that were identified from Round 1 were distributed in the second survey which was launched in June 2021 and remained open for two weeks. The expert participants were asked to vote on the strategies that were identified in Round 1. For each area of development and target sector the participants were asked: *'Which of the below would you like to see given further resources within early childhood education and care settings to mitigate the negative impacts of COVID on children's [cognitive/ social and emotional/ speech and language/ physical] development?'* They were asked to vote for a third of the strategies (i.e., if there were 12 strategies they were asked *'select the four which you feel are most effective'*).

### **Round 3:**

The results of the second survey provided a list of the top third of strategies that the expert participants believed would be the 'most effective'. Round 3 was launched in September 2021 and again remained open for two weeks. In Round 3, the participants were then asked to rank the strategies in each area of development and target group: *'Please rank the options from 1 (most effective) to X (least effective). Please place the options below into the order you feel represents your view and would be most beneficial'*. The ranked lists were measured using Kendall's W coefficient which has been recognised as an effective way of measuring non-parametric rankings (Okoli & Pawlowski, 2004; Schmidt, 1997). The values of W range from 0 to 1, with 1 representing perfect consensus. A value above 0.7 represents a 'good' level of consensus. As indicated in Table 1, a high level of consensus was not shown between the expert participants.

Finally, to understand how dispersed the rankings were for each strategy, a measure of dispersion was calculated (Tables 2–5). Dispersion was calculated by taking the measured IQR and dividing by the maximum possible IQR (i.e., number of strategies each in group – 1). Dispersion was considered to be high when the value was greater than 0.7.

### **Practitioner survey:**

In addition to the expert survey, in order to understand what the ECEC practitioner community felt would be effective strategies, the top one-third of strategies identified by experts in Round 2 were presented

**Table 2: Cognitive development**

Target	Strategy	Expert group		Participant group		Mean difference	p
		Mean rank	Dispersion	Mean rank	Dispersion		
Practice and pedagogy	Ensure the environment is supportive of play (including social play, indoor and outdoor play)	2.3	0.50	2.14	0.67	0.16	0.95
	Provide more quality time with staff supporting and extending play and playful experiences	2.33	0.67	2.69	0.67	-0.36	0.41
	Less focus on formal learning (or catch up) and more on independent play and exploration (for example loose parts, play, fantasy, talking and listening and creative activities such as drawing)	2.39	0.67	2.09	0.67	0.3	0.72
	Adults to observe children and support children based on knowledge from their observations	2.97	0.50	3.09	0.67	-0.12	0.06
Family and community	Support a positive home environment	1.25	0.75	1.25	0.75	0	1.00
	Provide support to parents such as Parenting Give it Time, Reach Up etc.	1.75	0.75	1.75	0.75	0	1.00
Finance and Resourcing	Increase Early Childhood Education and Care opportunities for all children; support universal access rather than targeted (e.g., all 'rising twos' and three-year-olds to access funding)	2.15	0.67	2.02	0.67	0.13	0.17
	Do not close Early Childhood Education and Care if there is another lockdown (including schools)	2.36	0.50	2.44	1.00	-0.08	0.02

Target	Strategy	Expert group		Participant group		Mean difference	p
		Mean rank	Dispersion	Mean rank	Dispersion		
	Provide and support more high-quality settings and professionals working with under 5-year-olds	2.36	0.67	2.49	0.33	-0.13	0.96
	Focus on poverty reduction and be poverty aware (for example, screen all communication to families with a 'poverty sensitive' lens)	3.12	0.67	3.06	0.67	0.06	0.08

to practitioners. Practitioners were recruited by emailing primary schools in Wales for the attention of their Foundation Phase leads. Settings who consented to share contacts on the Care Inspectorate Wales<sup>1</sup> register of childminders and day care settings were also contacted. 378 practitioners responded to the survey. Of these, 71 (18.8%) worked in a private nursery, 54 (14.3%) in a pre-school, 20 (5.3%) in school nurseries, 92 (24.3%) in a primary school, and 99 (26.2%) as a childminder. The remaining 11.1% worked in various other settings such as wrap-around settings and holiday clubs. Practitioners were also asked to rank the strategies from what they believed would be the most to the least effective. Practitioners' rankings were also measured using Kendall's W coefficient (see Table 1). Similarly to the practitioners, Kendall's W coefficients show that a high level of consensus was not found between the practitioners.

### Strategy themes

Key themes were also explored amongst the top one third of strategies suggested by experts. Using the codes that were identified during the consolidation of strategies in Round 1, the key themes in the top third of strategies were identified. The team met to collectively discuss themes and ideas before returning to the data to review

1 Care Inspectorate Wales is the independent regulator of social care and childcare in Wales.

**Table 3: Social and emotional development**

Target	Strategy	Expert group		Participant group		Mean difference	p
		Mean rank	Dispersion	Mean rank	Dispersion		
Practice and pedagogy	Avoid a 'catch up' agenda or putting pressure on children	3.53	0.82	4.29	0.71	-0.76	0.66
	More high-quality early years professionals being trained and employed	4.00	0.82	5.17	0.57	-1.17	0.25
	Provide opportunities to undertake free play	4.25	0.43	4.76	0.57	-0.51	0.58
	Create a sense of belonging for children	4.28	0.39	2.69	0.43	1.59	0.61
	Support easy to access and reliable sources of support for ECEC settings around social and emotional development during / post pandemic	4.94	0.68	4.72	0.57	0.22	0.25
	Practitioners to use child-led approaches, supported by observations, such as a PACE approach	4.97	0.29	4.89	0.54	0.08	0.33
	Provision of outdoor activities and opportunities	4.97	0.68	4.55	0.43	0.42	0.09
	Communications and dialog should be developed between ECEC and parents (not just information giving)	5.06	0.57	4.92	0.57	0.14	0.47
Family and community	Neighbourhood based play and family support interventions	1.77	0.38	2.26	0.50	-0.49	0.78
	Supporting families financially and emotionally with high quality parenting support	1.90	1.00	1.66	0.50	0.24	0.66

Target	Strategy	Expert group		Participant group		Mean difference	p
		Mean rank	Dispersion	Mean rank	Dispersion		
	Providing parental mental health support	2.33	0.50	2.08	0.50	0.25	0.42
Finance and Resourcing	Good Quality ECEC	2.31	0.75	2.57	0.75	-0.26	0.92
	More funding for all children to access high quality ECEC	2.72	0.25	2.51	0.25	0.21	0.10
	Increase free early education offer to whole year and all more groups	3.06	0.50	2.91	0.50	0.15	0.13
	Poverty reduction	3.28	0.75	3.64	0.50	-0.36	0.13
	Focus on the 'Summer of fun' concept to get children enjoying and playing rather than 'catching up'	3.63	0.69	3.38	0.75	0.25	0.53

them. These were also organised into the overarching target sectors, as presented in Table 1.

### Results

Tables 2–5 show the top third of strategies from the list of 190 consolidated strategies originally presented to the expert participants in Round 2. These have been ordered by the mean rank established by the expert participant group who took part in Round 3 of the Delphi study. A lower mean rank shows that the group ranked this strategy more favourably.

Tables 2–5 show the final mean ranking by both the expert participants and the dispersion (measured IQR divided by maximum possible IQR) for each area of development. A higher level of dispersion demonstrates a greater range of opinion on that strategy. Overall, the expert participants showed greater dispersion in the ranking of the strategies than the practitioners. This is also reflected in Kendall's *W* coefficients for each participant group (as per Table 1).

**Table 4: Speech and language**

Target	Strategy	Expert group		Participant group		Mean difference	p
		Mean rank	Dispersion	Mean rank	Dispersion		
Practice and pedagogy	A calm supportive environment, giving time for children to speak - not rushing them	3.47	0.30	2.44	0.20	1.03	0.86
	High quality training for ECEC staff on effective language development strategies (for example, Elklan)	3.71	0.40	5.84	0.60	-2.13	0.06
	Taking child-initiated approaches to play and learning	4.35	0.40	3.66	0.30	0.69	0.81
	Encouraging the use of conversation-eliciting and maintenance strategies (e.g. open-ended questions, explanations)	4.68	0.43	5.22	0.40	-0.54	0.28
	Play and quality interactions with a known and trusted practitioner	5.68	0.50	7.19	0.40	-1.51	0.93
	Opportunities for outdoor play and learning	6.38	0.53	6.22	0.30	0.16	0.09
	Opportunities to free play, particularly with peers	6.94	0.33	6.49	0.50	0.45	0.81
	High quality of resources in settings such as picture books, rhymes and songs, lots of opportunities to sing, chant and word play etc	7.06	0.53	5.77	0.40	1.29	0.71
	Opportunities with skilled practitioners for activities such as role play, show and tell, turn taking	7.09	0.45	7.56	0.50	-0.47	0.69

Target	Strategy	Expert group		Participant group		Mean difference	p
		Mean rank	Dispersion	Mean rank	Dispersion		
	Opportunities for pretend and imaginative play	8.26	0.33	7.43	0.50	0.83	0.55
	Limit the focus on 'catch-up' approach	8.38	0.50	8.19	0.50	0.19	0.95
Family and community	Support parents to enable children's speech and language learning at home e.g. eye contact; close interaction; stories and rhymes	1.97	1.00	2.21	0.67	-0.24	0.76
	Encourage parents to talk and sing to their children regularly and often	2.09	1.33	2.31	0.67	-0.22	0.06
	Access to books / library and parent / toddler groups for parents	2.58	1.33	3.10	0.67	-0.52	0.30
	Parenting advice on reducing screen time and increasing reading, singing and talking to their child/ren	3.36	1.42	2.38	0.67	0.98	0.001
Finance and Resourcing	Further funding and universal access to high quality ECEC throughout the year	1.68	2.50	2.06	1.00	-0.38	0.89
	Keeping playgroups, nurseries and playgrounds open during periods of COVID-19 restrictions	2.13	2.63	2.16	0.88	-0.03	0.56
	Ensure speech and language therapy available at an early intervention stage (for both English and Welsh)	2.19	1.63	1.78	0.50	0.41	0.61

**Table 5: Physical development and health**

Target	Strategy	Expert group		Participant group		Mean difference	p
		Mean rank	Dispersion	Mean rank	Dispersion		
Practice and pedagogy	Encourage and support unstructured high-quality play opportunities and time for exploring	2.83	0.29	2.88	0.29	-0.05	0.45
	Develop confidence and risk taking in children	3.37	0.57	2.48	0.29	0.89	0.01
	Plan an environment that encourages children to move in a variety of different ways such as to support development of body awareness for example, floor play and climbing	4	0.57	4.22	0.43	-0.22	0.45
	Information to practitioners about the importance of play, risk, challenge and play opportunity.	4.17	0.57	4.92	0.43	-0.75	0.76
	Free meals with an emphasis on healthy eating and communicating healthy eating messages to parents	4.91	0.57	5.09	0.57	-0.18	0.69
	Strategies/ training to help all practitioners deliver physical literacy development. For example, making links with Forest School and physical activity specialists to lead and improve practice in this area	5.26	0.71	5.38	0.71	-0.12	0.92
	Play games that involve movement (both indoor and outdoors)	5.31	0.43	5.13	0.43	0.18	0.13
	Promoting resources and training for practitioners on use of the outside area	6.14	0.43	5.91	0.29	0.23	0.83

Target	Strategy	Expert group		Participant group		Mean difference	p
		Mean rank	Dispersion	Mean rank	Dispersion		
Parents and families	Free events and activities at local venues / spaces to allow children to experience new environments and develop physical skills	2.71	0.40	2.26	0.40	0.45	0.71
	Making activity more affordable for the whole family (for example more affordable sports such as swimming)	3.29	0.60	3.17	0.40	0.12	0.98
	Promotion of simple and easy to implement messages on being active and ways to promote physical development from birth e.g. tummy time, 'This Mum Moves', new parent walking groups, Welsh active early years schemes	3.44	0.60	4.46	0.60	-1.02	0.07
	Information to parents about the importance of play, risk, challenge and play opportunity	3.62	0.65	3.48	0.60	0.14	0.09
	High quality parenting support	3.88	0.40	3.11	0.40	0.77	0.80
	Provide physical exercise programs for parents and preschool children, to do at home or in a drop-in basis, at both outdoor and indoor locations	4.06	0.80	4.51	0.60	-0.45	<0.001
	Society and the outdoors	Encourage adults and children to play in the outdoors and natural environments	1.35	1.00	1.27	1.00	0.08
	Access to meaningful outdoors experiences everyday	1.65	1.00	1.73	1.00	-0.08	0.22

*Delphi Study to identify strategies*

Target	Strategy	Expert group		Participant group		Mean difference	p
		Mean rank	Dispersion	Mean rank	Dispersion		
Finance and Resourcing	Universal access to high quality early child education with play-based learning in an out-doors/nature-based environment	1.45	0.50	1.99	0.50	-0.54	0.42
	Further funding and universal access to high quality ECEC throughout the year	2.17	0.50	2.06	1.00	0.11	0.06
	Keeping playgroups, nurseries and playgrounds open during periods of COVID-19 restrictions	2.38	0.75	2.06	1.00	0.32	0.93

T-tests were also conducted for each strategy to see if there was a significant difference between the expert and practitioner groups in the mean ranking for each strategy. For the majority of responses, no significant difference was found between the ranked position by the experts and practitioners, suggesting relative consistency between each group for where they ranked the strategy. However, significant differences were found between the experts and the practitioners on four strategies. In the area of cognitive development, experts gave a significantly higher rank to the finance and resourcing strategy ‘*do not close Early Childhood Education and Care if there is another lockdown (including schools)*’ than practitioners:  $t(286)=-0.32$ ,  $p=0.02$ . In the area of speech and language development the experts gave a significantly lower rank to the family and communities strategy ‘*parenting advice on reducing screen time and increasing reading, singing and talking to their child/ren*’ than practitioners:  $t(239)=4.69$ ,  $p=0.001$ . Finally, two strategies showed significant differences between participant groups in the area of physical development and health. In practice and pedagogy, experts were significantly more likely to give a lower rank to ‘*Develop confidence and risk taking in children*’ than practitioners:  $t(237)=2.88$ ,  $p=0.01$ , and in parents and families experts were significantly more likely to give a higher ranking to ‘*Provide physical exercise programs for parents and preschool children, to do at home or in a drop-in basis, at both outdoor and indoor locations*’ than practitioners:  $t(222)=-1.55$ ,  $p<0.001$ .

*Discussion*

This study collected experts' suggestions of strategies that could be used to mitigate the adverse impact of COVID-19 on children aged under five in Wales. The top one-third of strategies were then ranked by both the expert group and practitioners in ECEC settings. The initial part of this discussion section will answer RQ1 by highlighting the key themes emerging from the strategies suggested by experts. The second section will discuss of the similarities and differences between the expert and practitioner groups to answer RQ2.

*RQ1: What do experts believe are the most effective strategies to mitigate the adverse impact of COVID-19 on children under-5?*

***Practice and Pedagogy***

In line with the current literature around the benefits of play (Kourti et al., 2021) strategies that targeted play were suggested across all four areas of development. This was the overwhelmingly dominant theme within the practice and pedagogy strategies. More specifically, strategies that consisted of free, or child-led, play were highly valued. This mirrors the understanding of high-quality play as being child-directed and freely chosen (Ginsburg, 2007; Waters-Davies, 2022). The use of the outdoors was also, as supported by the extensive literature supporting the benefits of outdoor play for children's holistic development (Bento & Dias, 2017; Clements, 2004; Tinney, 2022).

Furthermore, the use of adults within the ECEC environment was also considered in these strategies, echoing the international research supporting the importance of quality ECEC staff (Cumming, 2021; Ringsmose, 2022). The importance of adults being appropriately trained was viewed as important by the expert group but less so by the practitioners themselves, despite Welsh Government reviews highlighting the importance of this (Welsh Government, 2014; National Assembly for Wales, 2019). Furthermore, strategies which involved the adults supporting and facilitating the children were suggested to support cognitive, social and emotional development. This is also mirrored in the literature which highlights the adult as a key facilitator of children's development (Quinones & Pursi, 2020; Rekers, 2022).

### ***Families and Community***

Within the strategies which targeted families and the community, providing information to parents and carers was viewed as important, as supported by the literature on home-school communication and parental engagement (Berthelsen & Walker, 2012; Goodall, 2016; Goodall & Montgomery, 2013). This encompassed advice on screen time, exercise programmes, pre- and post-natal information and named intervention schemes which targeted different areas of development. Strategies within neighbourhoods were also suggested and included free local events, access to libraries and resources, and local toddler groups. Finally, financial support and advice for families was also deemed as important.

### ***Finance and Resourcing***

Key within the finance and resourcing strategies suggested was the importance of universal access to provision. Across all domains of development, the need for high-quality provision that was available to all children was consistently highlighted. This is also highlighted by Van Huizen and Plantenga (2018), who found in their meta-analysis that quality provision was vital in universal access to ECEC in the global context and this tended to benefit children from disadvantaged contexts.

The importance of not closing ECEC settings, including children's playgrounds and outdoor spaces, was also key. This is echoed across research on the negative impact of COVID-19 as a result of closing educational institutions (Clarke et al. 2021; Dodd, Westbrook & Lawrence, 2020; Public Health Scotland, 2020; Marchant et al., 2021). Finally, overarching strategies about the need for poverty reduction were also in the top one third of strategies suggested by experts, which resonates with wider concerns highlighting the impact of digital/data poverty (Donaghy & Crick, 2021; Nesta, 2021).

*RQ2: Is there agreement between the expert and ECEC practitioner community in Wales on the best strategies to mitigate the adverse impact of COVID-19 on children under-5?*

Initial analysis of the ranked strategies using Kendall's W coefficient on both the expert and practitioner groups, and amongst all participants

suggested a lack of agreement and consensus across all of the participants who were asked to rank the strategies (see Table 1). Today, consensus is less important for many investigators with a lack of agreement being considered as a valid outcome of a ranking exercise (Armstrong, 1989; Skulmoski, Hartman & Krahn, 2007). Due to the diverse perspectives of the experts and practitioners involved in both the Delphi study and the wider ECEC practitioner survey, the lack of consensus on the rankings of the factors was considered appropriate.

Dispersion values were also generated in order to understand the dispersion in the ranking for each strategy. These showed greater dispersion in the ranks of the experts than the practitioner group. Again, this is perhaps unsurprising given the diversity within the expert group which consisted of academics, organisational representatives and expert practitioners. However, some themes were also apparent in the strategies that had a larger rate of dispersion. There was more dispersion in the rankings of strategies that spoke about the importance of not closing ECEC provision in the event of a resurgence of COVID-19, or another pandemic. Experts were also more likely to have greater variability in their ranking of strategies that named particular interventions and resourcing needs, with greater consistency shown in strategies that spoke more holistically about ECEC strategies. Both the expert and practitioner groups had varied opinions on the need to avoid the 'catch up agenda'. This perhaps echoes the mixed media and political messages on the importance of 'catching up' after COVID-19, both nationally (Welsh Government, 2021; Wales Centre for Public Policy, 2022) and globally (Sonnemann & Goss, 2020; UNICEF, 2022). Finally, both the expert and practitioner groups had varied opinions on the importance of training for adults in ECEC settings.

Overall, very few significant differences were found between the expert and practitioner groups and the mean rank for each strategy. This suggests that while there was variance within groups, the average importance for each strategy was generally agreed upon between both groups providing some credibility to the ranked order of strategies, despite within-group variance.

### *Limitations*

While there was agreement between the expert and practitioner group on the ranked position of the strategies, there was only weak agreement

within groups. This highlights the diverse views and opinions of the groups, particularly the expert group. However, the purpose of this research was to understand the potential strategies that could be used to mitigate the adverse impact of COVID-19 on children aged under five in Wales. While consensus was not found within the participant groups overall themes and preferences of strategies were generated. 'Discensus' is a valid Delphi outcome (O'Neill, Scott & Conboy, 2011) and in this study provides valuable information on the varied opinions on the strategies suggested. The study highlights that opinions on the most effective strategies to mitigate the impact of COVID-19 are likely to be context specific and therefore, future research should explore contextual differences between both experts and practitioners.

### *Conclusion*

This study has identified a number of key themes that experts believe are important to mitigate the adverse impact of COVID-19 on children aged under five in Wales. The dominant theme within the strategies suggested by experts was the importance of high-quality play experiences. The importance of universal provision and quality support for teachers and families was also highlighted, which resonates with recently proposed options for expanding childcare support in Wales (Welsh Government, 2022). These themes were dominant in both participant groups, despite consensus not being found between them. Therefore, this research using Wales as a national case study suggests clear directions for future and emerging policy and practice that could be replicable and portable to other ECEC settings across the UK and internationally as we continue to move into a post-COVID new (ab)normal.

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