

1 **Full title: “People play it down and tell me it can’t kill people, but I know people**
2 **are dying each day”. Children’s health literacy relating to a global pandemic**
3 **(COVID-19); an international cross sectional study.**

4 **Short title: Children’s health literacy relating to a global pandemic (COVID-19)**

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6 Lucy Bray*¹, Bernie Carter¹, Lucy Blake¹, Holly Saron¹, Jennifer Kirton¹, Fanny Robichaud², Marla
7 Avila³, Karen Ford⁴, Begonya Nafria⁵, Maria Forsner⁶, Stefan Nilsson⁷, Andrea Chelkowski⁴, Andrea
8 Middleton⁴, Anna-Clara Rullander⁶, Janet Mattsson⁸, Jo Protheroe⁹

9

- 10 1. Faculty of Health, Social Care and Medicine, Edge Hill University, Ormskirk, UK
11 2. UQO, Département de Sciences Infirmières, Québec, Canada
12 3. Botucatu Medical School - Unesp - Nursing Department, Brazil
13 4. Centre for Education and Research - Nursing and Midwifery, Tasmanian Health Service South
14 and University of Tasmania, Hobart Australia
15 5. Sant Joan de Déu Research Foundation, Spain
16 6. Department of Nursing, Faculty of Medicine, Umeå University, Umeå, Sweden.
17 7. Institute of Health and Care Sciences, and Centre for Person-Centred Care, Sahlgrenska
18 Academy, University of Gothenburg, Gothenburg, Sweden
19 8. The Swedish Red Cross University College, Department of Health Sciences. Department of
20 Learning, Informatics, Management and Ethics, LIME, Karolinska Institutet, Stockholm,
21 Sweden
22 9. Keele Medical School, Faculty of Medicine and Health Sciences, Keele University,
23 Staffordshire, UK

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25

26 **Abstract**

27 The aim of this study was to examine aspects of children's health literacy; the information sources
28 they were accessing, their information preferences, their perceived understanding of and their
29 reported information needs in relation to COVID-19. An online survey for children aged 7-12 years of
30 age and parent/caregivers from the UK, Sweden, Brazil, Spain, Canada and Australia was conducted
31 between 6th of April and the 1st of June 2020. The surveys included demographic questions and both
32 closed and open questions focussing on access to and understanding of COVID-19 information.
33 Descriptive statistics and qualitative content analysis procedures were conducted. The findings show
34 that parents are the main source of information for children during the pandemic in most countries
35 (89%, n=347), except in Sweden where school was the main source of information. However, in many
36 cases parents chose to shield, filter or adapt their child's access to information about COVID-19,
37 especially in relation to the death rates within each country. Despite this, children in this study
38 reported knowing that COVID-19 was deadly and spreads quickly. This paper argues for a community
39 rather than individual approach to addressing children's health literacy needs during a pandemic.

40 **Introduction**

41 The COVID-19 virus has spread throughout the world and was declared a pandemic by the World
42 Health Organisation (WHO) on the 11th March 2020. The pandemic has caused unprecedented
43 upheaval to societies all over the world, and by the time this study closed (June 2020) there had been
44 over 9 million cases worldwide¹. In most countries people were asked to mitigate the transmission of
45 the virus and save lives by adhering where possible, to guidance to work from home, stay at home and
46 maintain social distancing or movement control. For many children this has meant there have been
47 massive changes to their lives, with 'home-schooling' and staying in touch with friends and extended
48 family via remote methods. UNICEF² notes that children might find it difficult to understand what they
49 are seeing and hearing about the pandemic and can be particularly vulnerable to feelings of anxiety,
50 stress and sadness.

51 With the COVID-19 pandemic, as in previous epidemics, it is important for children and adults to be
52 able to access and understand health and public information in order to ensure that they adhere to
53 infection control precautions³. A person's ability to obtain, process and use information to make
54 choices and decisions about their health is termed health literacy⁴. Health literacy is more than reading
55 and writing health related information, but relates to familial, organisational and societal influences
56 on a person's ability to access, understand and use information to shape their health⁵.

57 Social media, television and the internet has been filled with information about COVID-19, and this
58 has been termed an 'infodemic'⁶. However, despite this, research has shown that adults have low
59 levels of health literacy in relation to this virus with many being unable to identify symptoms of
60 infection⁷ or appreciate that the virus is contagious⁸. At the time of writing, no studies could be
61 identified which had explored aspects of children's health literacy (access to and understanding of
62 information) in relation to the COVID-19 pandemic. However, children have been expected to play a
63 significant role (e.g. handwashing, social distancing) in reducing the transmission of the virus.

64 This study resulted from an international collaboration between six countries; UK, Australia, Sweden,
65 Brazil, Spain and Canada. Each of these countries experience of COVID-19 has been different. There
66 was a notable difference in the variation in death rates with relatively few deaths in Australia but
67 much a higher rate in the UK and Brazil. The authorities in the different countries asked their
68 populations to adhere to different approaches to mitigate the transmission of the virus (Table 1),
69 different approaches to how key health messages and information were shared with children about
70 COVID-19 (Table 1), and different terms were used by children, parents and the media in relation to
71 COVID-19 e.g. coronavirus (UK, Australia) and corona (Sweden). Some countries such as Canada held
72 national press briefings specifically for children and developed LEGO® animations to share health
73 messages from the Prime Minister with children. In other countries, such as England, the children's
74 minister answered questions posted by children. Information for children such as colourful books and
75 videos have been generated and shared through social media, the internet and school (Table 1). It is
76 not known if this information reaches its intended audience or what other sources of information

77 about coronavirus children access either independently or through their parents, friends or
 78 communities. We know that children’s health literacy is heavily influenced by family and
 79 organisational systems⁹, and we were keen to explore aspects of children’s health literacy (access to
 80 information, information exchange, information preferences, perceived understanding) during a
 81 pandemic across a range of countries and contexts.

82 **Table 1: Examples of the different approaches to mitigate transmission of COVID-19 and provide**
 83 **information to children about COVID-19 (coronavirus) within the participating countries during the**
 84 **time of the study**

Country	Different approaches to mitigate transmission of COVID-19	Examples of different forms/channels of information
United Kingdom	Lockdown was introduced on the 23 rd of March and people were asked to ‘stay at home to save lives’. Children were schooled at home, apart from the children of key workers. Shops other than those selling essential provisions were closed, as were parks, playgrounds and leisure facilities. Group activities and non-essential travel was stopped.	Information for children such as colourful books and videos have been generated by individuals, charities and health organisations and shared through social media, the internet and school. The children’s minister answered questions posted by children on several occasions.
Sweden	Requirements for social distancing was minimized for children in Sweden. Children aged 6-16 years attended school during the whole period of pandemic. Older children (aged 16-19 years) and many adults were required to work remotely. Group activities of more than fifty people, e.g. leisure and club activities were cancelled. Many shops were closed, people were only allowed to travel 1-2 hours from home and children were not allowed to visit their grandparents	The Public Health Agency distributed information about COVID-19 through posters, TV, radio and internet. There is information on the agency’s website adapted for children (information about the virus and how it is spread, and how to stay safe) including a YouTube video. Children received information in school via national education programme.
Australia	Australian borders were closed to all non-residents on 20 th of March. States started closing borders in mid- late March with each one declaring a public health emergency. Social distancing rules were imposed on 21 st March and state governments started to close non-essential services, for children this meant closure of playgrounds, parks, pools and libraries. Schools closed in early April and,	Children’s television programs aired specific episodes on COVID-19 for example Play School (preschool - age 6) and Behind the News (age 8-13). Dedicated health and government news conferences answered questions from children. Schools communicated via fact sheets, posters, social media, emails and SMS to update parents. Information for children was often directed to parents in the first

	apart from children of essential workers, children 'learnt from home'. Individuals were asked to 'stay home to save lives' and 'flatten the curve'	instance e.g. 'how do I talk to my child'. Radio and parenting websites also gave practical guidance to parents e.g. stopping the spread and physical distancing.
Canada	Lockdown was introduced differently (schedule and directives) for each province. Generally, public gathering restrictions started on the 12th of March, schools closed the following week and all non-essential businesses closed on the 23rd of March. Travel restrictions were put in place between many provinces and Territories. Throughout Canada, most children were home-schooled during the confinement with wide variations of teacher involvement.	Some daily briefings given by the Prime minister of Canada included a few words directly to the children. Quebec's Prime minister also had a few briefings targeting children. Influencers on social media were asked to reinforce the public health guidance to young people. Online resources were available on the Government of Canada website.
Brazil	Social distancing was implemented autonomously by each of the states within Brazil. The state of São Paulo, started lockdown in the second and third week of March with the closure of schools and universities. Some states tried to enforce lockdown, but in some cases without much success. Brazil is experiencing one of the highest global death rates/million population from COVID-19.	Specific content for children (animation, videos and comic book) was provided by schools, by the ministry of health, pediatric societies, universities, and hospitals.
Spain	Lockdown started on the 13 th of March for everybody in the country. Initially for 2 weeks but at the end this was extended until the 20 th of June. Children were required to stay indoors for six weeks.	There were no official messages from the government addressed to children or young people. There were spots on TV from the Ministry of Health to increase the awareness about the use of masks and social distancing requirements, using cartoons, but these were addressed to all ages of the population. Specific institutions such as the children's hospitals have designed specific content for parents and children.

85

86 This international study aimed to examine aspects of children's health literacy; information sources
87 they were accessing, their information preferences, their perceived understanding of and their
88 reported information needs in relation to COVID-19. The study also explored the role
89 parents/caregivers play in aspects of their child's health literacy and factors that influence their

90 decisions to share, discuss, direct or limit their child's access to information. This study was conducted
91 relatively early in the trajectory of the pandemic, whilst many countries were requiring children and
92 families to mitigate the transmission of the virus by staying at home. It is important to understand
93 children's access to and preferences for information in order to ensure that optimal strategies are
94 developed to communicate information within this and any future pandemics.

95 **Materials and Methods**

96 This study used a prospective online survey using the Survey Monkey platform to collect quantitative
97 and qualitative information from children and parents/caregivers.

98 The survey was developed and pre-tested with nine children (aged 9-16 years) and five parents from
99 the UK through remote consultation (email, telephone). The children and parents were either known
100 to the researchers or members of The Forum (a young peoples' consultations and engagement group).
101 The consultation resulted in amendments being made to the content, format, language and
102 appearance of the survey and recruitment materials.

103 The children's survey was designed to foreground their abilities and skills, focussing on short closed
104 and open text questions and a word association question (Table 2). The survey also asked children to
105 draw and label a picture about COVID-19/coronavirus/corona and 'why we are being asked to stay at
106 home' (this element of the study will be reported elsewhere). The survey for children focussed on;
107 their access to information about COVID-19 and preferences for receiving information, their
108 knowledge about the virus, their information needs and their thoughts associated with the pandemic
109 (Table 2). The survey was targeted at 7-12 year olds, reflecting middle childhood and a critical age for
110 developing health literacy skills¹⁰ as this is when they are starting to shape their own constructs of
111 healthy actions.¹¹ The survey for parents/caregivers included five closed questions and five questions
112 seeking longer text responses. The parent/caregiver survey was structured around; their access to
113 information about COVID-19 (sources, frequency of accessing sources), their child's access to
114 information sources and whether and how they chose to share/not share information about COVID-

115 19 with their child (Table 2). The surveys of children and parents were not linked, both could
 116 participate independently of one another.

117 **Table 2: Questions in the Child and Parent/Caregiver survey**

Children’s survey	
Where have you got information from about the coronavirus?	Multiple choice question with ‘other option’ (mum/dad/carer, friends, TV, Children’s TV programme, Internet, Social media, School, You Tube, Radio, Newspapers/magazines, NHS websites, I haven’t looked at any information, government information/press releases)
From the choices above, which is the main way you get your information about the coronavirus?	Open text
Generally, has the information been easy to understand	Multiple choice (very easy to understand, easy to understand, difficult to understand, very difficult to understand, not sure)
How would you like to get information about the coronavirus?	Open text
Please tell us three things you know about coronavirus	Open text
Please tell us about three things you would like to know about coronavirus	Open text
How much do you think you know about coronavirus?	Multiple choice (I know lots and lots, I know quite a bit, I know a little bit, I don’t know much)
I find talking about the coronavirus...	Multiple choice (interesting worrying, fine, boring, useful, I don’t talk about it, other)
Please tell us 3 words you think of when thinking about the coronavirus	Open text
Could you draw and label a picture to explain ‘why we are all trying to stay at home during the coronavirus?’	Open
Parent/caregivers’ survey questions	
Where do you access information about coronavirus (COVID-19)	Multiple choice (Family, friends, TV, Leaflets, Internet news, WhatsApp, NHS websites, health charities, Children’s TV channels, radio, social media, newspapers and magazines, I try and avoid any information, other)
From the choices above where is the main place you get information about coronavirus?	Open text
How often do you access information about COVID-19?	Multiple choice (multiple times a day, once day, every other day, every 3-4 days, once a week, other)
How much do you feel you know about coronavirus?	Likert scale (I know enough about COVID-19, I don’t know enough about COVID 19, I am not sure)
Where does your child get their information about coronavirus?	Tick as many as applicable (parent/carer, friends, You tube, social media, internet, TV, Newspapers/magazines, school, radio, they have not accessed any information, I restrict their access to information, other)
How do you decide what information to share with your child about coronavirus (COVID-19)?	Open text
Is there any information you choose not to share with your child about coronavirus (COVID-19)?	Open text

I find talking about coronavirus with my child	Multiple choice (makes them less worried, makes them more worried, I am unsure how this makes my child feel, I do not talk to my child about coronavirus)
What kind of information about coronavirus (COVID-19) do you think would be helpful to your child?	Open text
How do you think your child would like to receive information about coronavirus (COVID-19)?	Open text
Please add below any other thoughts you have about how children access information about coronavirus?	Open text

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119 Three broad demographic questions (age, area and country) were collected from both children and
 120 parents/caregivers; responses were anonymous and did not identify the participant. We asked both
 121 children and parents if they/their child were attending school or being home-schooled and if who was
 122 living in the family home had changed as a result of COVID-19. The survey was translated into Spanish,
 123 Portuguese, French Canadian and Swedish and there was some minor tailoring of some
 124 questions/response options to suit the context of individual countries, including the term used to
 125 describe COVID-19.

126 The survey opened in the UK (9th of April 2020), Australia (20th April 2020), Canada (27th April 2020),
 127 Brazil (29th April 2020), Spain (3rd May 2020) and Sweden (22nd May 2020). Data collection closed
 128 within all countries on the 1st of June 2020.

129 **Recruitment**

130 Children aged 7-12 years of age and parents/caregivers in the collaborating countries were eligible to
 131 participate in the study. To reach as many families as possible we used professional and personal
 132 networks and social media (Twitter, Facebook) platforms. A short information flyer about the study
 133 was included in each post/communication to accompany the survey links. More than one child and
 134 one parent from a household could participate and children and parents could participate
 135 independently from each other.

136 **Analysis**

137 Numerical data were analysed using SPSS. The study is descriptive and therefore inferential statistics
138 were not conducted, descriptive statistics (percentages and frequencies) have been used to examine
139 the data.

140 The open text data were analysed using qualitative content analysis¹². The initial analysis was led by
141 the team in the UK, who inductively constructed a coding framework. We met remotely to discuss and
142 explore interpretations and the developing codes and themes. The framework further developed
143 through additions and reorganisations when data from other countries were added and integrated.

144 **Ethical approval**

145 The study was approved by ethical review boards within the employing organisation of lead academics
146 within each participating country; UK (Edge Hill University Faculty of Health Social Care and Medicine
147 Research Ethics Committee CYPF 23), Australia (Tasmanian Human Research Ethics Committee
148 21702), Brazil (Botucatu Medical School Research Ethics Committee opinion n° 3.994.298), Spain
149 (approval was not deemed necessary by the ethics committee), Canada (Comité d'éthique de la
150 recherche (CER) Certificate number 2021-1163, UQO 2010-1163) and Sweden (Swedish Ethical Review
151 Authority, DNR2020-02351). Information at the beginning of the survey provided a brief explanation
152 of what participation in the study entailed and outlined that by submitting the survey, a
153 parent/caregiver (consented) or a child agreed (assented) to take part in the project. The research
154 ethics committees waived the need for written parental consent or written assent for participation.
155 Information at the end of the survey directed children and parents to websites with resources to
156 support them (of relevance to each participating country).

157 **Findings**

158 A total of 390 children and 1,230 parents/caregivers participated in the study distributed across the 6
159 participating countries (Table 3). The average age of the children who completed the survey was 9
160 years (SD 1.7).

161 **Table 3: Basic demographic Information of the participants**

	UK	Sweden	Australia	Canada	Brazil	Spain	Total
Parent/caregiver participants	279 N (%)	235 N (%)	123 N (%)	80 N (%)	132 N (%)	381 N (%)	1230 N (%)
Role							
Mother	249 (89%)	205 (87%)	110 (89%)	74 (93%)	116 (88%)	295 (77%)	1049 (85%)
Father	23 (8)	25 (11%)	11 (9%)	6 (8%)	14 (11%)	86 (23%)	165 (13%)
Caregiver	5 (2%)	4 (2%)	0	0	0	0	10, (0.01%)
Missing	2 (1%)	0	2 (2%)	0	2 (2%)	0	6 (0.5%)
Child Participants	156 N (%)	50 N (%)	49 N (%)	25 N (%)	58 N (%)	52 N (%)	390 N (%)
Age (M, SD)	9.24, 1.7	9.69, 1.8	9.3, 1.8	9.5, 1.6	9.1, 1.7	9.3,1.6	9.3, 1.7
Missing	1	1	2	1	0	0	
Self-reported school attendance (N, %)							
Accessing school work at home	147 (94%)	3 (6%)	31 (63%)	23 (92%)	58 (100%)	51 (98%)	313 (80%)
Going into school	-	46 (92%)	4 (8%)	1 (4%)	0	0	51 (13%)
Mix of school work at home and school	7 (5%)	0	12 (25%)	0	0	0	19 (5%)
Missing	2 (1%)	1 (2%)	2 (4%)	1 (4%)	0	1 (2%)	7 (2%)

162

163 The findings are structured in two sections; the first section highlights how information relating to
 164 COVID-19 was accessed by children and parents/caregivers, including how parents chose to facilitate
 165 or limit their child’s access to information. The second section relates to children and
 166 parent/caregivers’ reported understandings of COVID-19. Despite there being different approaches to
 167 mitigating the spread of the virus within the participating countries and different rates of COVID-19
 168 related deaths, there were commonalities in the responses of the children and the parents.

169 **Accessing information about COVID-19**

170 There were similarities in the sources of information children accessed across the participating
 171 countries. Most children accessed information about COVID-19 through their parents or caregivers
 172 (89%, n=347) (Table 4), with the exception of children in Sweden who reported their main source of
 173 information as from school (90%, n=45). This is of note as children participating in this study in Sweden
 174 were still attending school in person, whereas children in the other participating countries were
 175 mainly learning at home. Other commonly reported sources were school and the TV, although many

176 children reported that these were child-orientated channels and programmes ‘on a specific channel
 177 because I think just seeing the news on TV is harmful’.

178 **Table 4: Children’s self-report of their access to information about COVID-19.**

	UK	Sweden	Australia	Canada	Brazil	Spain
Child participants	156	50	49	25	58	52
Children’s self-report of where they access information about COVID-19 (response to multiple choice options)						
1 st highest response	Parent/caregivers 135 (87%)	School 45 (90%)	Parent/caregiver 48 (98%)	Parent/caregiver 23 (92%)	Parent/caregiver 49 (85%)	Parent/caregiver 48 (92%)
2 nd highest response	School 105 (67%)	Parent/caregiver 44 (88%)	TV 34 (69%) School 34 (69%)	School 11 (44%)	TV 41 (71%)	TV 41 (79%)
3 rd highest response	TV 91 (58%)	Children’s TV News 39 (78%)	Friends 20 (41%)	TV 9 (36%) Prime minister conference 9 (36%)	School 32 (55%)	School 26 (50%)
Children’s self-report of where they would like to access information about COVID-19 (open text response, three most frequent responses)						
1 st highest response	Parent/caregiver 54 (35%)	Teachers/school 18 (36%)	Parent/caregiver 15 (31%)	Parent/caregiver 8 (32%)	Animations 10 (17%)	Parent/caregiver 15 (28%)
2 nd highest response	TV and TV news 38 (24%)	TV and TV news 12 (24%)	TV and TV news 12 (%)	TV and TV news 4 (16%)	Websites for kids/YouTube 8 (14%)	TV and TV news 15 (28%)
3 rd highest response	Teachers/school 14 (9%)	Parent/caregiver 7 (14%) I do not know 7 (14%)	Websites for kids/YouTube 6 (12%)	Animation 2 (8%)	TV and TV news 7 (12%)	Websites for kids/YouTube 7 (13%)

179
 180 The sources children reported accessing for information (parents/caregivers or school) about COVID-
 181 19 generally matched their preference for where they received or accessed information
 182 (parents/caregivers or school) about COVID-19. The exception to this was Brazil where children
 183 reported parents/caregivers as their main source of information (85%, n=49), but they would like to
 184 receive information via animations (17%, n=10). However, across the participating countries,
 185 children’s preferences for information did not match those reported by parents/caregivers. Despite
 186 parents/caregivers recognising themselves as the primary source of information for their child (93%,

187 n=1,147), they reported that their child would prefer to receive information via animations, TV,
 188 games/quizzes and adults in a position of trust e.g. doctors/scientists (Table 5). Children reported their
 189 preference was to receive information through their parents.

190 **Table 5: Parents/caregivers' self-report of where they and their child access information about COVID-19.**

	UK	Sweden	Australia	Canada	Brazil	Spain
Parent /caregiver participants	279 N (%)	235 N (%)	123 N (%)	80 N (%)	132 N (%)	381 N (%)
Parent/caregivers' self-report of where <u>they</u> access information about COVID-19 (multiple choice response, three most frequent responses)						
1 st highest response	TV 209 (75%)	TV 168 (71%)	Government websites 92 (75%)	Premiers conference 61 (76%)	Government websites 73 (55%)	TV 290 (76%)
2 nd highest response	Internet news 158 (57%)	Public health website 156 (66%)	Social media 82 (67%)	Social media 55 (69%)	TV 72 (55%)	Newspapers/ magazines 174 (46%)
3 rd highest response	Public health website (NHS) 140 (50%) Social media 140 (50%)	Internet 144 (61%)	TV 68 (55%)	TV 51 (64%)	Internet 66 (50%)	Internet 173 (45%)
Parent/caregivers' report of where their child accesses information about COVID-19 (Multiple choice response, three most frequent responses)						
1 st highest response	Parent/carer 260 (93%)	Parent/carer 228 (97%)	Parent/carer 119 (97%)	Parent/carer 76 (95%)	Parent/carer 118 (89%)	Parent/carer 343 (90%)
2 nd highest response	TV 122 (44%)	School 206 (88%)	School 64 (52%)	TV 30 (38%)	TV 57 (43%)	TV 188 (49%)
3 rd highest response	School 71 (25%)	TV 101 (43%)	TV 46 (37%)	Social media 19 (24%)	School 40 (29%)	School 112 (29%)
Parent/caregivers' report of where <u>their child</u> would like to access information about COVID-19 (open text response and three most frequent responses for each participating country)						
1 st highest response	Animations 128 (46%)	Animations 98 (42%)	Animations 69 (56%)	TV/child friendly websites/news for children 22 (28%)	Animations 79 (60%)	Talks by a trusted adults they do not know (scientists/doctors/teachers) 131 (34%)
2 nd highest response	Games/quiz 57 (20%)	Talks by a trusted adults they do not know (scientists/doctor) 50 (21%)	Games/quiz 29 (24%)	Animations 18 (23%)	Games/quiz 53 (40%)	Animations 124 (33%)
3 rd highest response	Talks by a trusted adult	Games/quiz 30 (13%)	Talks by a trusted adult	Games/quiz 15 (19%)	Talks by a trusted adult	Games/quiz 87 (23%)

	they do not know (scientists/doctors) 42 (15%)		they do not know (scientists/doctors) 27 (22%)		they do not know (scientists/doctors/teachers) 8 (6%)	
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192 The role of parents/caregivers in facilitating or limiting their child’s access to information about

193 COVID-19 was clearly demonstrated in the findings. Many of the parents/caregivers in this study made

194 choices to shield (13%, n=160) or filter/limit (37%, n=451) their child from information about COVID-

195 19 (Table 6). Some parents explained that their decision to *‘shield my kids from the worst of it’* was

196 driven by a desire to protect them from the most distressing pieces of information and news, to

197 prevent them *‘worrying too much’* or *‘being too scared’*. In contrast some parents/caregivers (20%,

198 n=242) reported the importance of their child *‘knowing everything about it’* and not having

199 information *‘hidden from them’* and *‘feeling like adults are lying to them and holding stuff back’*. Many

200 of the responses identified that it was important to acknowledge individual information needs and

201 preferences for gaining information about COVID-19, *‘I share information which is appropriate for her*

202 *in a way which makes sense to her’*. This is important as in many cases, parents/caregivers were the

203 main source of information for children whom were in ‘lockdown’ and their contact with people

204 outside their homes was limited. Some of the responses from parents in Sweden indicated that their

205 children still attending school impacted on their access to information; they trusted school to provide

206 information to their child or did not *‘have any power over the information they get. They are in school*

207 *and hear lots of information’*.

208 **Table 6: Parents/caregivers’ decisions, choices and approaches to their child’s access to information about**

209 **COVID-19**

	Country	Frequency of responses N (%)	Representational quote selected from each country
Parent/caregivers’ report of how they share information about COVID-19 with their child (open text responses, content analysis and reporting of the most frequent responses)			
Shielding my child from information	UK (n=279)	69 (25%)	I try to shield my kids from the grim reality
	Sweden (n=235)	8 (3%)	Trying not to watch all the news while the kids are present.
	Australia (n=123)	9 (7%)	The bare minimum they need to know

	Canada (n=80)	6 (8%)	So as not to scare him, I keep information from him.
	Brazil (n=132)	13 (10%)	The only accessible way to know about coronavirus is on TV, therefore we select what we watch in front of them
	Spain (n=381)	56 (15%)	We don't talk about it
Diluting, filtering and adapting the information shared with my child	UK (n=279)	95 (34%)	We have kept it very simple, just sharing what is necessary to keep them safe and well
	Sweden (n=235)	71 (30%)	I tell the most important things but save the scariest details
	Australia (n=123)	63 (51%)	What is relevant, age appropriate, in simple language and nothing too overwhelming
	Canada (n=80)	38 (47%)	Information that will help to keep them safe ie social distancing, extra hand washing, sanitizing and explain to them why we are doing home learning and why things are closed.
	Brazil (n=132)	49 (24%)	I share information about prevention, hygiene. But I don't share information about the death rate or sad news
	Spain (n=381)	135 (35%)	I share the minimum. Only its existence, consequences such as not being able to go to school, not being able to leave and the message that all this will be fixed.
Giving information by responding to my child's questions	UK (n=279)	67 (24%)	We are answering his questions when he asks but not offering information he hasn't asked for.
	Sweden (n=235)	48 (20%)	In the first place I let my child raise it himself, then we talk about it and I answer questions if they have any
	Australia (n=123)	21 (7%)	I ask my daughter if she has any questions and I answer them in a way appropriate to her, so that she understands and can properly comprehend the information.
	Canada (n=80)	13 (16%)	I answer their questions. I don't supply too much info unless they have questions.
	Brazil (n=132)	10 (8%)	I try to answer only what he asks me
	Spain (n=381)	34 (9%)	I respond to all my child's questions and we discuss together any doubts or further comments that she may have.
Carefully sourcing accurate information to share with them	UK (n=279)	10 (4%)	I share anything that I believe to be fact. No sensationalism. I only share when they ask or if there is a significant piece of news
	Sweden (n=235)	16 (7%)	We discuss and agree on what is reasonable to share.
	Australia (n=123)	33 (27%)	We ensure it is factual and age appropriate
	Canada (n=80)	18 (23%)	I ensure all is 'fact' and science based {real news-data}, not fake news nor 'dumbing down' of content.
	Brazil (n=132)	19 (14%)	We find and then provide information using appropriate language
	Spain (n=381)	107 (28%)	I look up serious information which is not sensationalist
Sharing information with my child in an honest and open way	UK (n=279)	33 (12%)	I don't hide anything about the coronavirus with my children, but I use age appropriate language when explaining the more distressing aspects.
	Sweden (n=235)	32 (14%)	He gets to know what he wants via news. We talk about to see what image he has, what he thinks and whether he is worried or not
	Australia (n=123)	33 (27%)	I am just open and honest about it all. We discuss openly
	Canada (n=80)	18 (23%)	We have open, honest conversations so that my child can understand what this pandemic is about, how it spreads and how to stay safe.
	Brazil (n=132)	19 (14%)	I decided that he needs to know everything about the subject because it is very important to know how to take care and also see that it is very serious.
	Spain (n=381)	107 (28%)	No restriction, just do not overload them with information and adapt it to their age

Children being autonomous in addressing their information needs	UK (n=279)	5 (2%)	We think it is important to be led by what they want to know.
	Sweden (n=235)	22 (9%)	We have come to an agreement with the children that we should not talk too much about corona at home
	Australia (n=123)	0	-
	Canada (n=80)	5 (6%)	She's old enough to decide for herself.
	Brazil (n=132)	0	-
	Spain (n=381)	0	-
Parent/caregivers' report of information they choose <u>not</u> to share with their child (open text responses, content analysis and reporting of the most frequent responses)			
We don't talk about the death rates	UK (n=279)	132 (48%)	We have said some people have died from it but not to worry
	Sweden (n=235)	42 (18%)	We try to avoid death figures and things that can be perceived as scary
	Australia (n=123)	63 (51%)	We don't talk about death, they know people have died but we don't go into details.
	Canada (n=80)	36 (45%)	I will turn the radio off if they are talking about death counts.
	Brazil (n=132)	52 (40%)	I don't like him to see the deaths shown on TV everyday
	Spain (n=381)	105 (28%)	We don't talk about the number of deaths
We filter/adapt the information	UK (n=279)	7 (3%)	We try to be as open with him as much as possible but he is still young so we don't want him to be frightened. We explain that people with the virus may die but we don't give him detailed information such as the number of people that have died.
	Sweden (n=235)	26 (11%)	What feels important to me and useful to the child
	Australia (n=123)	6 (5%)	We don't share information about what is happening outside of Australia
	Canada (n=80)	2 (3%)	We don't hide anything but we don't explain everything, we keep facts that could cause anxiety to us.
	Brazil (n=132)	8 (6%)	We do not share political developments and fake news - information that do not add value
	Spain (n=381)	42 (11%)	I have diluted the information to allow them to understand the danger without scaring them.
We do not withhold information	UK (n=279)	58 (21%)	Not really. Death is a reality, and death from disease is too. It's important to be open but calm.
	Sweden (n=235)	8 (3%)	We share as much current information as possible at the level my child understands
	Australia (n=123)	19 (15%)	I'm not too concerned about them knowing about it
	Canada (n=80)	33 (41%)	I tell them everything in an age appropriate language and terms. I don't try to make up answers to questions where I don't know or where the evidence is uncertain.
	Brazil (n=132)	75 (57%)	No. I think it is essential that he knows all the implications and why these measures have been taken are important
	Spain (n=381)	167 (44%)	We have no restrictions on what we share
We do not share the risks of how children or people we know could get poorly/die	UK (n=279)	16 (7%)	We don't mention that it could affect their grandparents
	Sweden (n=235)	24 (10%)	Trying to keep away from how dangerous it can be to our loved ones
	Australia (n=123)	9 (7%)	We also don't talk about children dying or other adults close in age to us
	Canada (n=80)	12 (15%)	Victims that are children
	Brazil (n=132)	2 (2%)	About negative repercussions, especially in children.

Spain (n=381)	11 (3%)	We don't share traumatic information or risks to children
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211 The decisions of parents/caregivers to shield or limit their child's access to information in order to
 212 reduce feelings of anxiety about COVID-19 was interesting, as most parents/caregivers across all
 213 countries reported that talking about COVID-19 with their child made their child feel less worried
 214 (n=801, 65%), as opposed to more worried (n=169, 14%).

215 **Understanding about coronavirus (COVID-19)**

216 Children and parent/caregivers were asked to select on a multiple choice question how much they felt
 217 they knew about COVID-19. Both children (table 7) and parents (table 8) reported that they had good
 218 levels of knowledge about COVID-19.

219 **Table 7; Children's self-report of how much they know about COVID-19**

	UK	Sweden	Australia	Canada	Brazil	Spain	Total
Child participants	156 N (%)	50 N (%)	49 N (%)	25 N (%)	58 N (%)	52 N (%)	
I know lots and lots	26 (17%)	3 (6%)	3 (6%)	1 (4%)	8 (14%)	1 (2%)	42 (11%)
I know quite a bit	76 (49%)	30 (60%)	23 (47%)	11 (44%)	46 (80%)	27 (52%)	213 (55%)
I know a little bit	41 (26%)	7 (14%)	17 (35%)	11 (44%)	2 (3%)	19 (37%)	97 (25%)
I don't know much	12 (8%)	6 (12%)	5 (10%)	2 (8%)	2 (3%)	5 (10%)	32 (8%)
Missing	1, 0.6	4 (8%)	1, 2	-	-	-	6 (2%)

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222 **Table 8; Parent/caregivers' self-report of how much they know about COVID-19**

Parent/care giver participants	UK N (%)	Sweden N (%)	Australia N (%)	Canada N (%)	Brazil N (%)	Spain N (%)	Total
I know enough about COVID-19	193 (69%)	171 (73%)	104 (85%)	55 (69%)	76 (58%)	178 (47%)	781 (63%)
I don't know enough about COVID-19	48 (17%)	24 (10%)	7 (6%)	10 (13%)	30 (23%)	101 (27%)	220 (18%)
Not sure	38 (14%)	39 (17%)	12 (10%)	15 (19%)	26 (20%)	101 (27%)	232 (19%)
Missing	0	0	0	0	0	1 (0.5%)	1 (0.1%)

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Children were asked to report three things they knew about coronavirus in an open text format. There were 115 different items identified by the 390 children who participated; most responses were short. The three most frequent items identified by children in each country are noted in Table 9. The findings show that children were aware that coronavirus *'spreads really quickly'* (28%, n=110), that *'many people around the world are infected or have died'*, it *'started in China'* (22%, n=87) and *'is dangerous'* (13%, n=51). Other frequently identified pieces of information included that *'we need to stay home to save lives'* (n=54, 14%), *'it can kill you'* (n=30, 8%) and *'it is a stupid virus'* (n=30, 8%). There were similarities noted between children's responses from the different participating countries, despite there being differences in the contexts within each country (infection and death rates, social distancing rules). Some children wrote longer quotes which demonstrated feelings about information being hidden from them *'people play it down and tell me it can't kill people, but people are dying each day'*.

237 **Table 9: Children's self-report of their knowledge and information needs relating to coronavirus**

	UK	Sweden	Australia	Canada	Brazil	Spain
Child participants	156 N (%)	50 N (%)	49 N (%)	25 N (%)	58 N (%)	52 N (%)
Children's self-report of what they know about coronavirus (COVID-19) (response to open text response, the three most frequent responses for each country)						
1 st highest response	It is killing people/it is deadly 45 (29%)	It is mostly dangerous for old people 12 (24%)	It spreads easily/is infectious/contagious 18 (39%)	It spreads easily/is infectious/contagious 11 (44%)	It is dangerous/bad 17 (29%)	It spreads easily/is infectious/contagious 26 (50%)
2 nd highest response	It spreads easily/is infectious/contagious 43 (28%)	It started in China 10 (20%)	It started in China 13 (28%)	It is killing people/it is deadly 5 (20%)	It spreads easily/is infectious/contagious 12 (21%)	It started in China 26 (50%)
3 rd highest response	It started in China 38 (24%)	It is dangerous/bad 8 (16%)	It is killing people/it is deadly 11 (24%)	We need to stay home (to save lives) 5 (20%) It is mostly dangerous for old people 5 (20%)	It is killing people/it is deadly 11 (19%)	It is mostly dangerous for old people 9 (17%) It is killing people/it is deadly 9 (17%)

Children's self-report of what they want to know (open text response, three most frequent responses from each country)						
1 st highest response	When will it stop/end/go away 37 (24%)	When will it stop/go away? 20 (40%)	When will it stop/end/go away 16 (35%)	When will it stop/end/go away? 6 (24%)	Can we cure it? 22 (38%)	Can we cure it? 16 (%)
2 nd highest response	How did it start/where did it come from? 34 (22%)	How did it start/where did it come from? 16 (32%)	How did it start/where did it come from? 15 (33%)	When will a vaccine be available? 5 (20%)	When will a vaccine be available? 19 (33%)	When will it stop/end/go away? 14 (27%)
3 rd highest response	When will a vaccine be available? 15 (10%)	When will a vaccine be available? 5 (10%) Can we cure it? 5 (10%)	When will a vaccine be available? 3 (7%) Can we cure it? 3 (7%)	How did it start/where did it come from? 4 (16%)	When will it stop/end/go away 18 (31%)	How did it start/where did it come from? 12 (23%)

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239 The most frequently reported information needs from children were linked to *'when it will go away'*
240 *(28%, n=111), 'how and where did it start' (21%, n=81) and 'when and whether a cure or vaccine will*
241 *be found (23%, n=88)'. Other frequently identified information needs included 'how does it make you*
242 *poorly', 'when can we go back to school' and 'what does the coronavirus actually look like'. Some*
243 *children expressed that they did not want any more information about coronavirus, 'it is boring', 'I am*
244 *sick of hearing about it' or 'I don't want to know about it, because it's killing people and that makes*
245 *me sad'. In total 139 different questions were identified from the 390 children who participated in the*
246 *study. These questions were similar across the participating countries, despite the different contexts*
247 *the children were living in.*

248 Discussion

249 The focus of health literacy initiatives in relation to children and COVID-19 has been to develop
250 accessible information through ensuring materials are accessible, appealing, readable and digestible¹³
251 These initiatives, whilst worthy and useful, fail to acknowledge the importance of the wider aspects
252 of health literacy and how family and societal expectations and assumptions can limit children's access
253 to meaningful information during a pandemic. This study shows that despite accessible child-friendly
254 information being available, wider aspects of health literacy such as familial (parents filtering and

255 shielding children from information) and societal (understandings about children’s rights and
256 vulnerabilities) challenged children’s ability to access and understand some aspects of the response
257 to COVID-19. This paper argues that the current approach to sharing COVID-19 information with
258 children in many countries has been framed according to adult perspectives and foregrounds concerns
259 around children’s vulnerabilities and lack of competence.

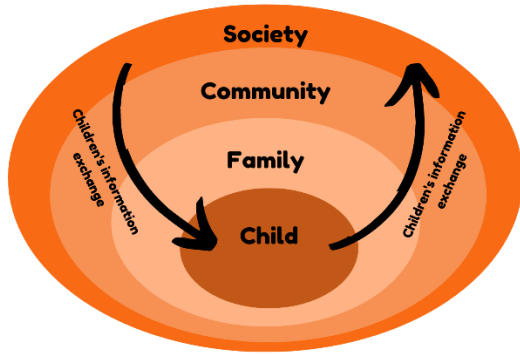
260 Children in this study demonstrated that although they had information and self-reported
261 understanding of some key elements around the COVID-19 pandemic, they sought answers to
262 important questions. Despite the many child-centred resources written and developed to address
263 children’s information needs, children across most of the participating countries were heavily
264 dependent on their parents/caregivers for information about COVID-19 during the pandemic. The
265 exception to this being children in Sweden who continued to attend school and gain most of their
266 information via school. Parents’ role as the lynchpin to their child’s access to COVID-19 information,
267 reflects existing evidence that parents are often the primary source of children’s health information¹⁰
268 This role is important as although some parents reported adopting an open and honest approach to
269 sharing information, some parents chose to shield their child from some of the upsetting news about
270 COVID-19, and many diluted, filtered or adapted the information they shared with their child. As noted
271 within other studies, from other contexts, parents/caregivers often filter or limit their child’s access
272 to health information¹⁴ in order to protect them from upsetting news¹⁵ and offer reassurance in place
273 of facts¹⁴. Despite parents’ choices, many of the children in this study reported knowing that people
274 were dying every day from the virus and that the virus was dangerous and spreading quickly.

275 Although it is known that children’s exposure to distressing imagery and news can cause them to
276 experience anxiety¹⁶, shielding children completely from information leaves them to ‘fill in the blanks’
277 on their own¹⁷, using their imagination and pieced together information. Our study supports previous
278 work which shows how communication with parents and family members is an important element for
279 children’s health literacy^{18, 19}. The interaction within a family can help children construct and develop
280 their understanding²⁰ of a topic through layering their knowledge and apply meaning¹⁹. Therefore,

281 listening to what children believe about COVID-19 is essential. Providing children with an accurate
282 explanation that is meaningful to them will ensure that they do not feel unnecessarily frightened¹⁷.
283 The need for clear targeted messaging for children at a community and societal level acknowledges
284 that parents may not always choose to share, know the information themselves or know how to
285 discuss difficult topics with their child.

286 Within many Western societies, children are perceived as vulnerable and innocent and are therefore
287 often only allowed access to certain types of knowledge; their access to information is censored²¹.
288 Although health education initiatives should embody children's right to be 'heard and listened to' as
289 acknowledged by the UNCRC²², evidence has shown how such initiatives can often be framed by adult
290 agendas and concerns¹⁹ and not acknowledge children as social actors²³. There has been a call for
291 children to be framed as 'equals' and 'co-learners' in how knowledge is created²⁴. Certainly within the
292 current pandemic there are uncertainties at all levels but there are opportunities for children to learn
293 alongside parents and communities (schools, local organisations). Within some of the participating
294 countries (notably Canada and Sweden), the approach to sharing information seemed to acknowledge
295 children as citizens and health messages were addressed at a national level and in an equitable way
296 to those of adults. Whereas in other countries (Brazil), political disquiet may have influenced how
297 information was created and shared with children. Our paper supports the understanding of health
298 literacy proposed by Nutbeam²⁵ as an 'interaction between the person and their environment' and
299 recognises the importance of context on an individuals' health literacy, in this case children's, ability
300 to obtain, understand and act on health information.

301 There is a need for a multi-source approach to how children receive information during a pandemic.
302 We propose that children need access to reliable and meaningful information from a range of sources
303 (individual, family community/school and society) during the pandemic in order to make sense of the
304 world and should be acknowledged as active participants in the management of the pandemic (Figure
305 1).



306

307 **Figure 1: Children’s Information Exchange in relation to COVID-19**

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309 Children in our study were able to identify their information needs. We argue they should be
 310 empowered at a familial, community and societal level to raise and discuss these information needs
 311 and concerns. Our study supports previous work that children’s health literacy should not be
 312 considered as an individual characteristic or as ‘individual agency’²⁷ but embedded within family,
 313 community (school, local community organisations etc) and wider societal health literacy practices²⁸.

314 This study contributes new insight into children’s access to and understanding of information about
 315 COVID-19 and highlights the importance of families, communities and society on these aspects of
 316 children’s health literacy. Further research should examine how access to credible information and
 317 levels of understanding influence children’s actions and decisions during the pandemic.

318 **Limitations**

319 The sample for this study was a convenience sample of those children and parents/caregivers who
 320 self-selected to participate, and the numbers of responses are low compared to the number of
 321 children who live within each country, therefore there are limitations in the representativeness of the
 322 findings. The survey was intentionally designed to be short to encourage completion; however, as a
 323 result demographic data including gender, socio-economic background, presence of special
 324 educational need or disability or parental employment were not collected. Absence of these data

325 limits our understanding of how these factors may have influenced perceived knowledge or
326 communication patterns within a family. Children may have completed the survey in the presence of
327 their parents and therefore felt the need to respond in a way desirable to their parents. We did not
328 obtain an objective measure of knowledge levels, instead children and their parent/caregivers' were
329 asked for a self-report of their perceived knowledge level. The survey was developed specifically for
330 this study, and although we consulted children during the development phase, there may have been
331 items which were not clear to children. The survey was conducted in a rapidly changing landscape and
332 although data were collected at the same time across the participating countries, the spread of the
333 virus evolved at a different pace across the countries. There were different approaches within the
334 participating countries to how the spread of the virus was mitigated (Table 1), the majority of children
335 in the study, apart from those in Sweden, were at home and their access to sources of information
336 independent to their parents was limited.

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