Psychosocial impact of 8 weeks COVID-19 quarantine on Italian parents and their children.

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Abstract

Objectives Italy was affected greatly by Coronavirus disease 2019 (COVID-19), emerging mainly in the Italian province of Lombardy. This outbreak led to profound governmental interventions along with a strict quarantine. This quarantine may have psychosocial impact on children and parents in particular. The aim of this study was to evaluate the impact of 8 weeks COVID-19 quarantine on psychosocial functioning of Italian parents and their children.

Methods In this cross-sectional survey, we included parents and children resided in Italy during the 8 weeks COVID-19 quarantine. We evaluated social and emotional functioning, clinical symptoms possibly related to emotional distress, and change in perspectives using a questionnaire.

Results The majority of 2315 parents (98% mothers) frequently experienced fear of getting ill (92%) and fluctuating moods (84%), the latter showing correlation to experiencing stress due to being in continuous close vicinity to their children (77%, $r = 0.33$). Parents reported a positive effect on the relationship with their partner (79%) and their children (89%). Irritability in children was frequent (74%) and correlated to parental fluctuating moods ($r = 0.40$). The vast majority of the participants (91%) reported that their perspectives for the future had changed.

Conclusions for Practice Our findings suggest a profound impact of the COVID-19 quarantine on emotional functioning of parents and their children in Italy. Despite the protective measure of quarantine against national viral spread and subsequent infection, health care professionals should be aware of this emotional impact, in order to develop protective or therapeutic interventions.

Keywords Quarantine · COVID-19 · Infectious diseases · Psychosocial impact · Italy

Significance Statement

What is known: Although quarantine is associated with important public health benefits, such as containment of viral spread, it can lead to serious psychological impact. With closing schools and strict home confinement, particularly parents and children can be vulnerable to the changes and uncertainties during quarantine.

What this study adds: In 2315 parents from various regions of Italy, a large majority experienced an increase in fear of getting ill and fluctuating moods during the 8 weeks quarantine, despite a positive effect on intrafamilial relationships. Irritability in children was frequent and correlated to parental fluctuating moods.

Introduction

On March 11th 2020, Coronavirus disease 2019 (COVID- 19) was declared a pandemic by the World Health Organization (WHO). As the first and one of the most affected countries in Europe, Italy counted 228.658 total cases with 32.616 deceased to date (May 22nd) (http://opendatadpc.maps.arcgis.com/apps/opsdashboard/index.html#/b0c68bce2cce478eaac82fe38d4138b1 Accessed May 23rd 2020.,). As the Italian outbreak emerged in the Lombardy region in February, further spread of COVID-19 in other Italian regions and across European countries was witnessed soon after (Tuite et al., 2020). In response to the dramatic Italian COVID-19 increases in infection and fatality rates, urgent measures were initiated promptly by the Italian government to ensure the containment and management of the epidemiological emergency from COVID-19. Subsequently, a nationwide quarantine was announced on March 9th 2020. (https://www.gazzettaufciale.it/eli/id/%02020/02/23/20A01228/sg,) This quarantine prohibited the entire Italian population from any non-essential travel and contacts. All social, cultural and commercial activities were suspended. There was an absolute ban on traveling between different regions of Italy or even leaving the private households, if not for reasons of extreme urgency or for obtaining basic necessities (https://www.governo.it/it/article/coronavirus-firmato-il%20-dpcm%2022-March-2020/14363). In this regard, law enforcement controls had been established throughout the national territory to ensure compliance to the quarantine measures.

Previously, quarantine measures have been imposed in order to contain the spread of communicable diseases in general, and in severe acute respiratory syndrome affected countries in particular (Barbisch et al., 2015; Brooks et al., 2020). Although quarantine is certainly associated with important public health benefits, it may lead to serious psychological impact on both adults and children which should be addressed when such measures are taken (https://unsdg.un.org/resources/policy-brief-impact-covid-19-children Accessed May 28th 2020.,; Wang et al., 2020) A recent review of previous quarantine measures mostly described negative psychosocial and clinical impact, potentially leading to long-lasting effects (Brooks et al., 2020). Although evidence of predictors of psychosocial impact is mixed, it is becoming clear that particularly children can be vulnerable to the changes and uncertainties during quarantine (Brooks et al., 2020; Wang et al., 2020). As schools are not only facilitating in social contact but may also be supportive in mental health care, a serious impact of school closure (as is part of a quarantine) can be expected (Golberstein et al., 2020). Additionally, forced home confinement can cause a lack of physical activity in children, possibly leading to irregular sleep or dietary patterns and clinical symptoms (Wang et al., 2020). As underlined by the United Nations (UN), prompt recognition of these negative effects and identifying risk groups could guide stakeholders, from health care workers to governments, teachers and parents, to mitigate the consequences of quarantine measures for parents and children in particular (UNITED NATIONS. *Policy Brief: The Impact of COVID-19 on children.* Accessed May 28th 2020. https://unsdg.un.org/resources/policy-brief-impact- covid-19-children).

A study on quality of life in China during this pandemic
stated a mild stressful impact in their population of 263 adults (Zhang & Ma, 2020). The study even described positive effects, including increased feeling for and caring of family members. However, this study was conducted in a smaller sample size living in a city which was not in quarantine during the study. A survey on emotional functioning of 2330 primary school children in Hubei Province, suggested an increase in depressive and anxiety symptoms during COVID-19 quarantine (Xie et al., 2020). These previous reports are situated in China where the psychosocial impact can be importantly dif- ferent considering various measures and cultural backgrounds (Jiao et al., 2020; Xie et al., 2020). Thus, this highlights the need to investigate these effects in other populations. In this survey we aimed to evaluate the impact of 8 weeks COVID-19 quarantine on the psychosocial functioning and perspectives of parents and children in Italy, as one of the most severely affected countries in Europe during the first wave of the pandemic.

Methods

Participants and Data Collection

This cross-sectional survey study was conducted between the 2nd and the 7th of May 2020, in the final week of the 8 consecutive weeks quarantine period. A survey link providing access to a structured questionnaire in Italian was dispersed to parents resided throughout Italy through an online platform. About 9800 parents are registered in this platform, which provides free consultation in Italian from medical specialists. Parents were eligible to participate in the survey if they had at least one child in their household and if their household resided in Italy at that moment.

The study was conducted in accordance with the Declaration of Helsinki and participation was on a voluntary basis (World Medical Association. *Declaration of Helsinki: ethical principles for medical research involving human subjects.*, 2013). Before participating in the survey, participants were informed that no personally identifiable information was obtained, and the data would be used for statistical research purposes. The risk of psychological damage of participating was considered negligible, as the questions did not impact the psychological integrity. No financial or other compensation was offered for their participation in this survey.

The Questionnaire

The aim of this survey was to evaluate the impact of COVID-19 quarantine on psychosocial functioning and perspectives of parents and children in (severely affected areas in) Italy. The impact on the following domains was evaluated: social functioning—with a primary focus on intrafamilial relationships -, emotional functioning, positive behavioral changes and clinical symptoms possibly related to emotional distress. The questions addressed the perceived impact of quarantine measures on the parents themselves and on their children. In addition, changes in the perspective of parents were evaluated regarding the government, the environment, the role of teachers, desires to expand the family and perspectives for the future. The 34 item questionnaire was developed using Google Forms by a team of Italian pediatricians and psychologists containing four areas of interest (for complete questionnaire, see Table 1):

1. Characteristics of the population
2. Parent data
3. Children data
4. Parent perspectives

The following characteristics of the population were collected: gender and age of the participating parent, marital status, working status, domicile, number of children in the household of the participating parent, age of the children within the household, presence of disabled children within the household. The questions on both parent and children data were further categorized in core areas and domains (Table 1). We used the outcome taxonomy of the Core Outcome Measures in Effectiveness Trials database; an outcome classification system enabling consistent reporting of general health and functioning outcomes (Dodd et al., 2018). The questionnaire was developed in Italian language and translated to English by the authors for research purposes.

Analysis

Responding parents were required to grade the extent to which the statements in the questionnaire applied onto their situation on a numeric rating scale from 1 to 10, with 1 corresponding to “does not apply” and 10 corresponding to “yes, applies a lot”. In the analyses, we categorized the answers into three groups: answers 1–3 as “no” or “this applies very little”, 4–7 as “yes, this applies a little” or “to some extent” and 8–10 as “yes, this applies a lot”. All results of quantitative variables were reported as frequency and/or percentage (%). Pearson’s correlation coefficients (r) were used for the correlation analyses of numeric variables while the intraclass correlation coefficients (ICC) were used for categorical-numeric analyses. A value r of 0 indicates no correlation, 0 to 0.2 a weak correlation, 0.2 to 0.4 a mild correlation, 0.4 to 0.6 a moderately strong correlation, 0.6 to 0.8 a strong correlation and 0.8 to 1.0 a very strong positive correlation between variables. Positive values represent a positive relationship whereas negative values represent a negative relationship between variables.

Results

In total, 2315 parents completed the questionnaire of which 2261 (98%) mothers and 54 (2%) fathers (Table 2). Most parents were between the ages of 26 and 45 years old (92%), of which 2229 (96%) were having a two-parent household and were either married (1605, 69%) or were having a partner (624, 27%). A total of 86 (4%) was having a single parent household and 639 (28%) were unemployed. When comparing the distribution of the Italian population, our survey represented relatively more inhabitants from the Northern regions than from Southern and Islands regions (https://www.statista.com/statistics/798303/italian-population-by-macro-region/ Accessed May 21st 2020.,) Moreover, a total of 3887 children was evaluated in the survey. The age of children was distributed in such a way

that 27% was under 3 years old, 34% between 3 and 6 years old, 30% between 6 and 12 years old and 9% was older than 12 years.

Most of the parents confirmed a positive effect of the COVID-19 quarantine on the relationship with their partner (2229 out of 2315 scoring 4–10, 79%) and on the relationship with their children (scoring 4–10 in 89%) (Fig. 1). Also, 92% of parents confirmed a satisfying experience of being in continuous close vicinity to their children. Regarding the emotional impact on parents themselves, 84% reported fluctuating moods. Fear of getting ill (92%) or fear of dying (85%) was also reported frequently. Parents were more divided in experiencing continuous close vicinity to their children as stressful (23% answered with "no, or only applies very little", 38% with "yes, applies to some extent" and 38% with "yes, applies a lot"). Compared to the frequently reported impact on emotional functioning, there were relatively low reported clinical symptoms possibly related to emotional distress, such as tachycardia, shortness of breath, headache or digestion difficulties.

Of the parents with more than one child (n = 1327), 87% reported improvement in the relationship among their children during the quarantine (scoring 4–10, see Fig. 2). Disobedient behavior of children was reported infrequently. Most parents (74%) indicated more restlessness and/or irritability in their children than before the quarantine, with 52% experiencing this substantially more (score 8–10). Increased tantrums and/or aggressiveness was reported in 62%, while 58% reported no or only very little change in fearful expressions. Regarding clinical symptoms possibly related to emotional distress in children, parents scored no or little sleep disturbance in 58% and no or very little change in appetite in 38%. Several positive behavioral characteristics in their children were reported by parents: learning new skills in 85%, more autonomy or responsibility in 79% and more serene or affectionate behavior in 73% Fig. 3.

Overall, parents indicated 'yes this applies' to most perspectives, with the exception of the desire to expand the family (71% scored 1–3 "no, or only applies very little"). Parents reported a changed opinion on the effects of mankind on the environment, as 60% scored 8–10 with a score of 10 in 28% of parents. The majority of participants reconsidered the role of teachers (76%) and felt that the governmental institutions are there for their citizens (60%). The vast majority of the participants (91%) reported that their perspectives for the future had changed.

Correlations

Work status, domicile, age of the children or number of children in a household showed no to weak correlation with emotional functioning outcomes of parents and children or perspectives for the future (all ICC or $r < 0.01$). Experiencing the continuous close vicinity to their children as stressful was correlated with fluctuating mood of parents ($r = 0.33$) and disobedience ($r = 0.47$). We further evaluated this correlation between fluctuating mood of parents and experiencing stress from being in close vicinity to their children, stratified by age group of the children. This correlation tended to be stronger in children aged 12 years or younger ($r = 0.33$ to 0.36) compared to children older than 12 years ($r = 0.16$). Fluctuating mood of the parents was correlated with irritability of their children ($r = 0.40$), with headache, dizziness or digestion difficulties of the parent ($r = 0.49$), with tachycardia or shortness of breath ($r = 0.39$) and changed perspective for the future ($r = 0.35$). As expected, aggressiveness, irritability and disobedience of the child ($r = 0.58$ to 0.74) were all strongly correlated as well as gaining new skills and increased responsibility ($r = 0.62$).

Discussion

The aim of this study was to evaluate the impact of the COVID-19 quarantine on psychosocial functioning and perspectives of Italian parents and their children. The majority of parents reported a positive effect on relationships with their partner (79%), their children (89%) and among children (87%). Nonetheless, parents frequently experienced fear of getting ill (92%) and fluctuating moods (84%), the latter correlating to experiencing the continuous close vicinity to their children being stressful ($r = 0.33$). Irritability or restlessness in children was frequent (74%) and correlated to parental fluctuating moods ($r = 0.40$). Remarkably, the vast majority (91%) reported that their perspectives for the future had changed.

Quarantine, with the obligation of isolation and social distancing, is considered as a protective measure against viral spread and pandemic infection. Yet, as stated by the WHO and the UN, adequate provisions during the COVID-19 pandemic should be in place including availability of psychosocial support in order to ensure the global health (World Health, 2020). Quickly after strict quarantine measures were introduced, the Italian population adapted these restrictions with high compliance (96%), reinforcing home confinement and social isolation for the entire population during 8 weeks (de Girolamo et al., 2020; UNITED NATIONS. *Policy Brief: The Impact of COVID-19 on children.* Accessed May 28th 2020. https://unsdg.un.org/resources/policy-brief-impact-covid-19-children). Factors that could have affected emotional wellbeing include uncertainties of the future, financial concerns, the loss of usual daily routine, clinical and social distancing, perceived lack of freedom, and increased care of children due to home schooling (Brooks et al., 2020; Jiao et al., 2020). We

can conclude from our data that the emotional impact on parents was profound. It is remarkable that our questionnaire included predominantly mothers. With closing schools and home confinement during the quarantine, certain changes in the modern family structure could be hypothesized, resulting in more responsibility for the mother on the management of the new harmonious family balance.

The increased emotional distress, in combination with changed perspectives for the future, could explain the decreased desire of expanding the family, as reported earlier by others in the Italian population (Micelli et al., 2020). Compared to high impact on mood fluctuations and fear, there are relatively low reported clinical symptoms possibly related to emotional distress, such as tachycardia, headache or digestion difficulties in parents. Although reports were infrequent, clinical symptoms seemed to be mildly to moderately correlated to fluctuating moods.

In children, the emotional impact of this changed situation seemed to express itself mainly as restlessness or irritability, rather than fear or anger. Similarly, Jiao et al. reported clinginess, inattention, and irritability as the most frequent psychological effects demonstrated by Chinese children during the COVID-19 epidemic (Jiao et al., 2020). Fortunately, we showed that a fair number of parents reported positive behavioral characteristics in their children as well and impact on sleep was not as common as mentioned in Chinese children during quarantaine (Jiao et al., 2020).

As others reported previously, we also showed positive effects of quarantine on the relationship between parents and between parents and their children (Lau et al., 2006). Factors that can cause positive effect during quarantine are less stress due to slowing down of the usual daily routine, having time to finish old work, learn new skills and spending more time with the family. These positive effects might be able to cushion some of the negative psychosocial impact of quarantine and could form a stable basis in these disrupted times. However, the emotional impact on both parents and children (and the relationship between these impacts) is alarming. One could hypothesize that if the quarantine took place over a longer period of time, the cushioning effects of positive social functioning would alter in time. Prolonged school closure could for instance lead to learning disabilities, in vulnerable households in particular, thus increasing inequality in society (UNITED NATIONS. *Policy Brief: The Impact of COVID-19 on children.* Accessed May 28th 2020. https://unsdg.un.org/resources/policy-brief-impact-covid-19-children). It is important to take in consideration that the population was aware of the fact that the quarantine was only temporarily. Both negative and positive effects of the current quarantine will most likely be affected by its duration. Since we did not study the effect of this quarantine in relation to its duration, it would be of interest to reevaluate the impact of the COVID-19 quarantine considering that the measures were lifted in Italy at the last day of inclusion for our survey. For targeted preventive and therapeutic measures with potential psychosocial impact, it is advisable to further identify groups at risk ("Humphreys KL, Myint MT, Zeanah CH. Increased
risk for family violence during the COVID-19 pandemic. Pediatrics. 2020; https://doi.org/10.1542/peds.2020-0982. Accessed June 1st 2020.,"; Pfefferbaum & North, 2020). Age of children did not show direct significant correlation with emotional functioning of parents. However, our data indicated that parents reporting fluctuating moods show a stronger correlation with experiencing stress from being continuously close to their children when their children were younger than 12 years. This implies that taking care of younger children continuously during a pandemic might increase emotional distress of parents that experience fluctuating moods. Thus, families with younger children are more at risk for increasing emotional distress in parents, which should be discussed in the consultation room. It would be of value to explore the predictive value of socio-economic factors in future studies.

We included a considerable number of participants in Italy, which is one of the most affected countries by the first wave of the COVID-19 pandemic in Europe. The widespread recruitment of parents and children through social media has caused a large sample and a wide diversity of participants with various demographic characteristics. Growing number of studies consider social media as an opportunity to improve or evaluate health care (Masnari et al., 2019). We demonstrated that engaging social media can greatly assist health care surveys. Our study sample is demographically representing the whole Italian population, with only slightly more participants in the Northern regions (Statista Research Department. Accessed May 22st 2020. https://www.statista.com/statistics/798303/italian-population-by-macro-region/). Moreover, the understanding of respondents of our questionnaire is underlined by the strong correlations between similar emotional functioning outcomes. Although this study is one of the first to report on psychosocial effects of quarantine in Italian parents and children, aggregating a large number of participants of one of the most affected European countries, it has certain limitations. Due to the method of recruitment, we were not able to collect data of the non-responding parents on the platform. There is a possibility that non-responders declined participation because they did not experience any impact, which might have biased our results. It should be noted that using a web-based questionnaire may be vulnerable to selection bias, such as an underrepresentation of parents with low socioeconomic status without access to internet or interest in the questionnaire topic. We did not collect data regarding compliance to quarantine measures, however it would be feasible to hypothesize high compliance in our

population considering that the majority felt supported by their institutions at least to some extent and the overall national high level of compliance. This study only includes parent reported outcomes and proxy-reports were used for the impact on children. The own experiences of the parents may influence their perceptions of their child in a way that a parent experiencing emotional distress may also be more likely to see affected emotional functioning in their child.

Conclusion and Implications for Practice

Our findings suggest a profound impact of the COVID-19 quarantine on emotional functioning of parents and their children in Italy. Despite the protective measure against viral spread and pandemic infection and a possible positive effect on intra-familial relationships, the psychosocial impact should not be underestimated. Health care professionals should be aware of this impact, particularly in families with younger children, and offer education and psychological assistance when needed.

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Declarations

Conflict of interest There are no conflict of interest to disclose.

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Table 1 Complete questionnaire

Characteristics of the population				
Gender	Male	Female		
Age	≤25	26–35	36–45	≥46
Marital status	Married	Partner, living in same household	Single	
Working status	Employee	Freelance	Unemployed	Other
Domicile (Italian regions)	North	Centre	South	Islands
Number of children	1	2	3	≥4
Presence of disabled child and which?	1	2	3	4
Age of children				
- Age 1st child	<3	3–6	6–12	>12
- Age 2nd child	<3	3–6	6–12	>12
- Age 3rd child	<3	3–6	6–12	>12
- Age 4th child	<3	3–6	6–12	>12
Parent data				
Core area	Domain	Question		
Life impact	Social functioning	Do you think that the relationship with your partner has taken advantage of this quarantine?		
Life impact	Social functioning	Do you think that the relationship with your children has taken advantage of this quarantine?		
ife impact	Emotional functioning	In this quarantine, is your mood particularly fluctuating?		
Life impact	Emotional functioning	Has the experience of being in continuous close vicinity to your children been stressful?		
Life impact	Emotional functioning	Have you been afraid and/or are you still afraid that you and your family members could get ill?		
Life impact	Emotional functioning	Have you had fear for your life or for that of your family members?		
Life impact	Positive change	Has the experience of being in continuous close vicinity to your children been satisfying?		
Clinical	Clinical symptoms possibly related to emotional functioning	In this quarantine, did you experience headache, dizziness, digestion difficulties?		
Clinical	Clinical symptoms possibly related to emotional functioning	In this quarantine, did you experience tachycardia, and/or shortness of breath?		
Children data				
Core area	Domain	Question		
Life impact	Social/emotional functioning	In this quarantine, do you think that your children have become more disobedient?		
Life impact	Social functioning	Do you think that the relationship among your children has improved during this quarantine?		
Life impact	Emotional functioning	In this quarantine, do you think that your children have shown more tantrums and/or aggressiveness?		
Life impact	Emotional functioning	During this quarantine, do you think that your children have shown more restlessness and/or irritability?		
Life impact	Emotional functioning	Do you think that fearful expressions by your children have increased during this quarantine?		
Life impact	Positive change	In this quarantine, do you think that your children have become more serene and/or affectionate?		
Life impact	Positive change	In this quarantine, do you think that your children have become more autonomous and/or responsible?		
Life impact	Positive change	In this quarantine, do you think that your children have developed new skills?		
Clinical	Clinical symptoms possibly related to emotional functioning	Have your children shown loss of appetite or increase of appetite in this quarantine?		
Clinical	Clinical symptoms possibly elated to emotional functioning	Have your children shown sleep disturbances in this quarantine?		

Table 1 (continued)

Parent perspectives
In this quarantine, have you felt that the governmental institutions are there for their citizens?
In this quarantine, do you think to have changed opinion on the effects of mankind on the environment?
In this quarantine, have you felt the desire to meet people outside from your household?
In this last quarantine, do you think to have reconsidered the role of teachers?
In this quarantine, have you felt the desire to expand the family?
At the moment, has your perspective for the future changed compared to before?
In general, do you think that the perspectives for the future are positive?
In general, do you think that the perspectives for the future are negative?

Table 2 Characteristics of the population

	Number	Percentage
Gender		
Male	54	2.3
Female	226	97.7
Age parent		
≤ 25 years	46	2.0
26–35 years	944	40.8
36–45 years	1168	50.4
≥ 46 years	157	6.8
Marital status		
Married	1605	69.3
Partner	624	27
Single	86	3.7
Working status		
Employed	1197	51.7
Free-lance	241	10.4
Unemployed	639	27.6
Other	238	10.3
Domicile		
North	1429	61.7
Center	426	18.4
South	348	15.0
Islands	112	4.8
Number of children in household (n = 3887)		
1	988	42.7
2	1106	47.8
3	197	8.5
4	24	1.0
Presence of disabled children within a household and which child? (total n = 76)		
1st child	53	69.7
2nd child	19	25.0
3rd child	4	5.3

Age children (n = 3887)	< 3 years (26.5%)	3–6 years (34.3%)	6–12 years (30.3%)	> 12 years (8.9%)
1st child (n = 2315)	466	840	772	237
2nd child (n = 1330)	475	418	343	94
3rd child (n = 222)	83	66	58	15
4th child (n = 24)	6	10	6	2

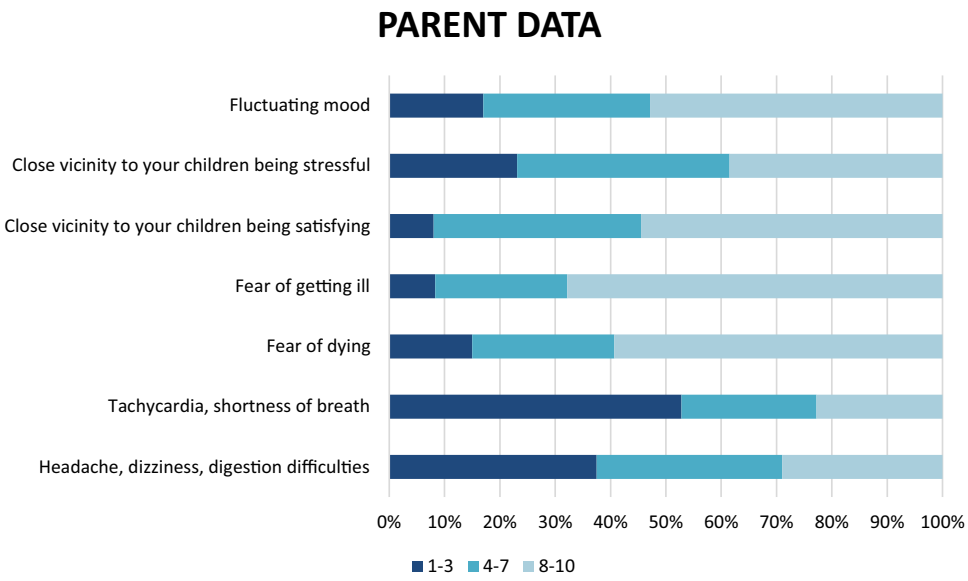

Fig. 1 Parent data. Social functioning, emotional functioning, clinical symptoms and positive change with answers 1–3 (in dark blue) as "No" or "this applies very little", 4–7 (in medium blue) as "Yes, this applies a little" or "to some extent" and 8–10 (in light blue) as "Yes, this applies a lot". For complete formulation of questions see Table 1

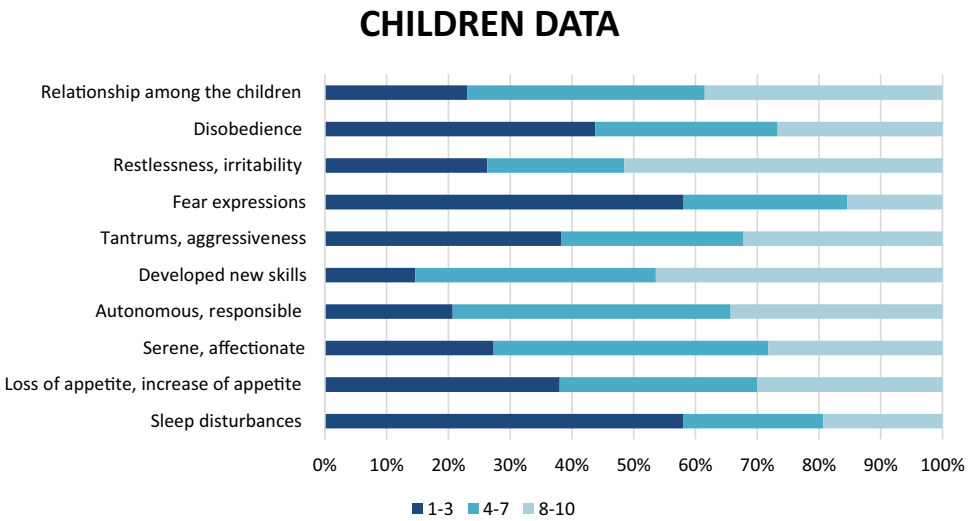

Fig. 2 Children data. Social functioning, emotional functioning, clinical symptoms and positive behavioral characteristics in their children with a answers 1–3 (in dark blue) as "No" or "this applies very little", 4–7 (in medium blue) as "Yes, this applies a little" or "to some extent" and 8–10 (in light blue) as "Yes, this applies a lot". For complete formulation of questions see Table 1

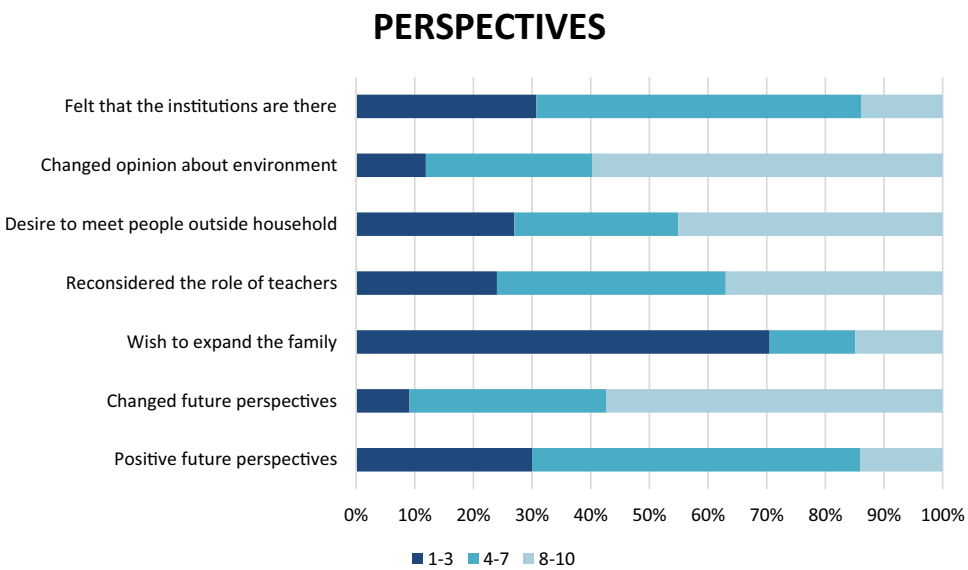

Fig. 3 Parent perspectives. Parent perspectives, with answers 1–3 (in dark blue) as "No" or "this applies very little", 4–7 (in medium blue) as "Yes, this applies a little or to some extent" and 8–10 (in light blue) as "Yes, this applies a lot". For complete formulation of questions see Table 1