



## The Impact of COVID-19 Quarantine on Children's Behaviors and Language

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### Article History:

Received on: 12 Jul 2020  
Revised on: 10 Aug 2020  
Accepted on: 27 Aug 2020

### Keywords:

COVID-19,  
Community pharmacies,  
Children's Behaviors,  
Language delay,  
Memory deficits

### ABSTRACT

COVID-19 pandemic has spread across the world, which considered a relative of the severe acute respiratory syndrome (SARS), with possibility of transmission from animals to human and effect each of health and economic. Several preventative strategies and non-pharmaceutical interventions have been used to slow down the spread of COVID-19. The questionnaire contained 36 questions regarding the impact of COVID-19 quarantine on children's behaviors and language have been distributed online (Google form). Data collected after asking parents about their children behavior during quarantine, among the survey completers (n=469), 42.3% were female children, and 57.7 were male children. Results showed that quarantine has an impact on children's behaviors and language, where stress and isolationism has a higher effect, while social relations had no impact. The majority of the respondents (75.0%) had confidence that community pharmacies can play an important role in helping families in protection their children's behaviors and language as they made the highest contact with pharmacists during quarantine. One of the main recommendations that could be applied to help parents protection and improvement their children's behaviors and language in quarantine condition base on simple random sample opinion is increasing the role of community pharmacies inpatient counseling and especially towards children after giving courses to pharmacists in child psychology and behavior. This could be helpful to family to protect their children, from any changing in them behaviors and language in such conditions in the future if the world reface such the same problem.

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ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v11iSPL1.3085>

Production and Hosted by

IJRPS | [www.ijrps.com](http://www.ijrps.com)

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### INTRODUCTION

COVID-19 is a global pandemic. Until now, COVID-19 has affected more than 22.6 million people worldwide, resulting in over 792,000 reported deaths ([Worldometers, 2020](#)). Several preventative strategies and non-pharmaceutical interventions have been used to slow down the spread of COVID-19, including; applying quarantine, social distancing, careful infection control, and the isolation of patients ([Nicola et al., 2020](#)). In early 2020 many counties apply quarantine to stop the spreading of viruses between people, and these counties

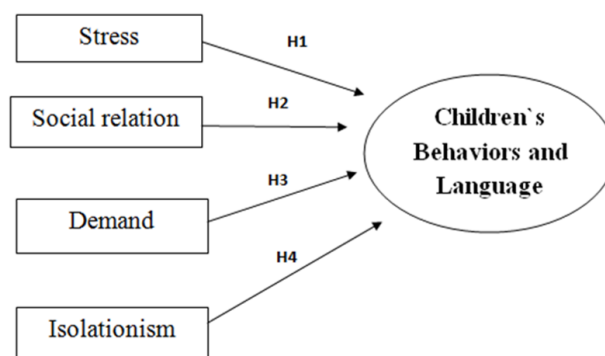
succeed in stopping a pandemic from affecting a large number of people. Additionally, several countries request people who have potentially come into contact with the infection to isolate themselves at home or in a dedicated quarantine facility. Mainly reviewed studies reported negative psychological effects, including post-traumatic stress, confusion, and anger between isolated people (Brooks *et al.*, 2020). The family's life suddenly and extremely changed. At home, the role of parents in children's education has become more essential than before. Just parents around Children, provide them support in homework, and promote a positive development and new learning experiences for toddlers and preschoolers (Wang *et al.*, 2020). Parents became alone not only in taking care of their children's school-assignments but also in the management of their children at the home environment.

All educational faculties are closed, no babysitters and some families no available grandparents, and contact with neighbors is not allowed. Many parents also must do smart-working. Handling time and space to work with children around may be very problematic as they are called to take an educational role while also trying to live their own lives and get on with their everyday job commitments. This situation has significantly increased the risk of experiencing stress and negative emotions in parents, with a potential cascading effect on children's well-being (Sprang and Silman, 2013). All these conditions affect Children's Psychological, affecting the results of children's mental health (language delay, memory deficits, aggressiveness, attention defects and telling events/storytelling) (Loades and Mastroyannopoulou, 2010; Anderson and Olson, 2006). Behavior is affected by an overabundance of information received every day through which shown sequence of physical activity, mental and emotional done by humans in selecting (Al-Samydai *et al.*, 2019, 2020). Due to quarantine the role of community pharmacists in mental health has been increasing and go much further, from encounter individuals with mental health problems to play an important role in giving parents advice and information. The majority of studies conducted during COVID-19 pandemics examined the psychological impact on the general population, leaving the study of effects on children mainly unexplored. The present study aims to drop light on COVID-19 impact on children's behavior and language and highlight the important role of community pharmacists in helping families.

## MATERIALS AND METHODS

### Study Design

This study was conducted from April to August 2020. Google form surveys, were used to ensure the safety of participants (Al-Samydai *et al.*, 2020). A simple random sampling strategy was used to collect data. All subjects reported their demographic data and completed a standardized questionnaire that studied the impact of COVID 19 quarantine on Children's Behaviors and Language. To ensure the quality of the survey, we set the response range of some items (e.g., the age range was limited to parents. Finally, a total of 469 participants who completed the questionnaires (contained 36 question as represented on APPENDIX, Table 6) were included in the analysis (Al-Samydai *et al.*, 2020).



**Figure 1: Study model The impact of COVID 19 quarantine on Children's Behaviors and Language**

### Study model

The (Figure 1) represents the study model which put to study research problem, objectives and hypotheses (Yousif and Al-samydai, 2019; Al-Samydai *et al.*, 2019).

### Statistical analysis

The study aimed to document the impact of COVID-19 quarantine on Children's Behaviors and Language. Therefore, bivariate correlation analysis, linear regression, two-sample t-test, one-way ANOVAs were conduct throw SPSS® software used, Version 21 was used (Aburjai *et al.*, 2019).

## RESULTS AND DISCUSSION

The coronavirus disease 2019 (COVID-19) pandemic and the resulting economic recession may have negatively affected people to be stressed, fear, and anxiety about what could happen, which reflects strongly on emotions and mental health of adults and children (WHO, 2020). Imposed mass quarantine applied by nationwide lockdown programs and applying and social distancing, However, these actions are very necessary to reduce the spread of COVID-19, but they could make people feel isolated

**Table 1: Demography distribution of study sample**

	Type	Frequency	Percent
Gender of Child	Male	270	57.6
	Female	199	42.4
Father's scientific qualifications	high school or less	169	36.0
	Bachelor degree	218	46.5
	Master Degree	52	11.1
	PhD Degree	30	6.4
Mother's scientific qualifications	high school or less	114	24.3
	Bachelor degree	311	66.3
	Master Degree	37	7.9
	PhD Degree	7	1.5
Is there a baby sitter at home	Yes	19	4.1
	No	450	95.9
Family Income per month	Less than 200 JD monthly	34	7.2
	200-600 JD monthly	186	39.7
	600-1000 monthly	139	29.6
	1000-2000 monthly	74	15.8
	More than 2000 monthly	36	7.7
Are the grandparents presence at home during the quarantine? (One or more)	Yes	97	20.7
	No	372	79.3
Impact of community pharmacies during quarantine	Negative	82	17.5
	Positive	387	82.5
Did you think community pharmacies could play an important role to help families to protected them children from behavior change	Yes	352	75.0
	No	117	25.0

**Table 2: Results of multiple regressions of the first main hypothesis**

Dependent Variable	R	R2	F	Sig.	Independent Variable	B	T	Sig
Children's behaviors and language	0.504 <sup>a</sup>	0.254	39.408	0.000	Stress	.221	4.902	0.000
					Social relation	.064	1.209	0.227
					Children demand	.111	2.176	0.030
					Isolationism	.218	4.957	0.000

**Table 3: Correlation (Pearson Correlation ) between in depended factors and depended factor**

	Stress	Social relation	Children demand	Isolationism	Sig
<b>Over all Correlation with change the children's behaviors and language</b>					
	0.422	0.327	0.351	0.398	
<b>Impact of Father's scientific qualifications on change the children's behaviors and language</b>					
high school or less	0.505	0.414	0.439	0.465	
Bachelor degree	0.338	0.257	0.255	0.357	0.072
Master Degree	0.492	0.340	0.449	0.285	
PhD Degree	0.386	0.233	0.380	0.448	
<b>Impact of Mother's scientific qualifications on change the children's behaviors and language</b>					
high school or less	0.451	0.459	0.370	0.527	
Bachelor degree	0.414	0.270	0.356	0.341	0.425
Master Degree	0.227	0.308	0.186	0.462	
PhD Degree	0.628	0.125	0.389	0.258	
<b>The impact of baby sitter present on change the children's behaviors and language</b>					
Yes	-0.011	0.148	0.226	-0.042	
No	0.437	0.333	0.357	0.407	0.002
<b>The impact of grandparents presence at home on change the children's behaviors and language</b>					
Yes	0.477	0.415	0.323	0.415	
No	0.409	0.304	0.358	0.393	0.336
<b>Economic level impact on change the children's behaviors and language</b>					
Less than 200 JD monthly	0.648	0.548	0.625	0.662	
200-600 JD monthly	0.401	0.354	0.325	0.427	
600-1000 monthly	0.321	0.301	0.177	0.325	0.000
1000-2000 monthly	0.540	0.250	0.526	0.410	
More than 2000 monthly	0.380	0.196	0.395	0.339	

and lonely (Yousif, 2019).

They can increase stress and anxiety in both of adults and children and also could affect significantly children's psychological which in the results affect Children's mental health (language delay, memory deficits, aggressiveness, attention defects and telling events/storytelling) (Bodrud-Doza et al., 2020), Table 1 shown demography distribution of study sample.

The general opinion of people in Jordan toward the impact of COVID-19 quarantine on children's behaviors and language was tested based on data col-

lected from a random sample and Table 2 shown the multiple regressions between the stress of children, social relation impact on children, children, demand during quarantine, and children isolationism during quarantine on them behaviors and language.

Table 2 shown the research dependent variables (children's behaviors and language) are significant because F significant is (0.00), which is less than (0.05), and the calculated F value (39.408) is more than the F table (2.89). Therefore, we reject the null hypothesis and accept the alternative one which states that there is a statistically significant effect

**Table 4: Multiple Comparisons of Economic level impact on change the children's behaviors and language**

Dependent Variable: VAR00001						
(I)	(J)		Mean Difference (I-J)		Sig.	
LSD	Less than 200 JD monthly	200-600 JD monthly	.24400*		.001	
		600-1000 JD monthly	.33975*		.000	
		1000-2000 JD monthly	.18925*		.006	
		More than 2000 JD monthly	.29325*		.000	
	200-600 JD monthly	Less than 200 JD monthly	JD	-.24400*		.001
		600-1000 JD monthly		.09575		.131
		1000-2000 JD monthly		-.05475-		.375
		More than 2000 JD monthly		.04925		.424
	600-1000 JD monthly	Less than 200 JD monthly	JD	-.33975*		.000
		200-600 JD monthly	JD	-.09575-		.131
		1000-2000 JD monthly		-.15050*		.024
		More than 2000 JD monthly		-.04650-		.450
	1000-2000 JD monthly	Less than 200 JD monthly	JD	-.18925*		.006
		200-600 JD monthly	JD	.05475		.375
		600-1000 JD monthly		.15050*		.024
		More than 2000 JD monthly		.10400		.103
	More than 2000 JD monthly	Less than 200 JD monthly	JD	-.29325*		.000
		200-600 JD monthly	JD	-.04925-		.424
		600-1000 JD monthly		.04650		.450
		1000-2000 JD monthly		-.10400-		.103

\*The mean difference is significant at the 0.05 level

**Table 5: Pearson correlation between variable Economic level (Income) and change in children's behaviors and language**

		change in children's behaviors and language	Economic level (Income)
Pearson Correlation	change in children's behaviors and language	1.000	-0.542
	Economic level (Income)	-0.542	1.000
Sig. (1-tailed)	change in children's behaviors and language	-	0.007
	Economic level (Income)	0.007	-
A	change in children's behaviors and language	20	20
	Economic level (Income)	20	20

at the level of ( $\alpha \leq 0.05$ ) of the (Stress, Social relation, Children demand, and Isolationism) on the children's behaviors and language during quarantine and its refracted a negative impact on children.

The relationship between the dependent and independent variables is strong and positive. It is more than (0.5) (Cohen, 1988),  $R = 0.504$ . Also, the  $R^2 = 0.254$ , which means that the contribution of the independent variables strongly affects the dependent variables with a percentage of 25.4%.

Since the value of the calculated t value for the variables (Stress: 4.902, children demand 2.176, and isolationism 4.957), are more than the t value table (1.96). This means they have a statistically significant effect on the children's behaviors and language. While social relation t value was 1.209, which was less than the t value table (1.96), which mean social relation don't have a statistically significant effect on the children's behaviors and language. Stress consider one of the main factors that could develop language delay (the type of communication disorder) in children which play a critical role in emotional and health of children (Long et al., 2008; Leung and Kao, 1999), increasing demand of children's in above the expected norm for age could be considered to be challenging behaviors (Ogundele, 2018), challenging behaviors becomes a worry as it is frequent, unexpected and leads to trouble at home. Addition-

ally, some literature has been shown that the COVID-19 outbreak has undoubtedly resulted in increased difficulties among Autism individuals (Colizzi et al., 2020).

Table 3 shows that there was in depended factors (Stress, Social relation, Children demand, and Isolationism) and depended variable (children's behaviors and language) with significant positive linear relationship 0.422, 0.327, 0.351, and 0.398 respectively. And A one-way ANOVA was performed to test the effect of Father and Mother scientific qualifications on children's behaviors and language. Results showed there were no significant differences, which means that parents' education doesn't have any impact on children's behaviors and language with Sig. 0.072 and 0.425; additionally, the presence of grandparents doesn't significantly impact children's behaviors and language with t-test Sig. value 0.336. while on the other hand, the presence of a baby sitter has a positive impact on children's behaviors and language with t-test Sig. value 0.002.

The mean  $\pm$  SD of Economic level impact on change the children's behaviors and language were significant difference among different Economic level with P value= 0.000, as shown in Table 3, Multiple comparisons were performed using the LSD at  $\alpha 0.05$ , data shown that the families with income of "More than 2000 monthly" was significantly less change in

**Table 6: Appendix - Questionnaire used in this study**

Demography data and general questions						
A	Gender /Child -	Male	Female			
B	Father’s scientific qualifications	High school or less	Bachelor degree	Master Degree	PhD Degree	
C	Mother’s scientific degree	High school or less	Bachelor degree	Master Degree	PhD Degree	
D	Family income	Less than 200 JD monthly	200-600 JD monthly	600-1000 monthly	1000-2000 monthly	More than 2000 monthly
E	Is there a baby sitter at home	Yes	No			
F	Are the grandparents available at home during the quarantine? (One or more)	No	No			
G	Impact of community pharmacies during quarantine	positive	negative			
H	Did you think community pharmacies could play an important role to help families to protected them children from behavior change	Yes	No			
First dimension Stress						
		Very agree	agree	Neither agree or nor disagree	disagree	Very disagree
1	The quarantine played a big role in having behavioral disorders for children -					
2	The quarantine affected children’s thinking which made them exhausted					
3	The quarantine played a role in increasing anxiety for children which affected their behavior					
4	The quarantine played a role in increasing children’s fear					
5	The quarantine played a role in increasing children’s nervousness					
6	The quarantine played a role in making children feel lonely					
7	The quarantine played a role in making children having fears to be affected by Covid-19					
8	The quarantine played a role in making children feel depressed					
9	The quarantine played a role in making children feel tensed					
Second dimension social relation						

*Continued on next page*

Table 6 continued

		Demography data and general questions				
		Very agree	agree	Neither agree or nor disagree	disagree	Very disagree
10	The social distancing due to quarantine may increase the feeling of isolation					
11	The social distancing due to quarantine may increase the feeling of longing for friends which may affect their behavior negatively					
12	The social distancing due to quarantine may increase family interaction which may affect children's behavior positively					
13	The social distancing due to quarantine may increase the pressure on parents which may create psychological problems for children					
14	The quarantine may be considered an opportunity to increase the bonds among family members					
15	Children have a great ability in discovering the features of fear and anxiety for their parents and this may affect their behaviors negatively					
		Third dimension children demand				
		Very agree	agree	Neither agree or nor disagree	disagree	Very disagree
16	The quarantine during Covid-19 urged children to ask for help from family members					
17	The quarantine during Covid -19 made children afraid when they are away from their family					
18	The quarantine during Covid -19 made children afraid of having their family being affected by the virus					
19	The quarantine during Covid -19 made children ask for more meals during the day					
20	The quarantine during Coved -19 made children insist more on their demands					
21	The quarantine during Covid -19 made the families refuse to leave their children alone.					

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Table 6 continued

Demography data and general questions					
Fourth dimension isolationism					
	Very agree	agree	Neither agree or nor disagree	disagree	Very disagree
22	The quarantine during Covid-19 played a role in increasing the hours of watching television				
23	The quarantine during Covid-19 played a role in increasing use of I pad in addition to being more isolated				
24	The quarantine during Covid-19 played a role in sitting alone for a long period of time				
25	The quarantine during Covid-19 played a role in reducing talking to family members				
26	The quarantine during Covid-19 played a role in thinking individually and taking decisions alone.				
27	The quarantine during Covid-19 played a role in increasing problems between family members				
Depended dimension children's behaviors and language					
	Very agree	agree	Neither agree or nor disagree	disagree	Very disagree
28	The tension created during Covid-19 added more psychological tension to family members				
29	The quarantine, during Covid-19 affected the relationship of children with their families and peers				
30	Stuttering appeared between children while quarantine				
31	The quarantine, during Covid-19 make children used short sentences				
32	The quarantine, during Covid-19 make children speak faster than normal				
33	Lack of attention appeared between children while quarantine				
34	Children were able to narrate events while quarantine				

the children's behaviors and language in comparison the families with income of "Less than 200 JD monthly" with Sig. <0.001 as shown in Table 4.

Additionally, when we applied person correction The results showed that we had a strong negative correlation as monthly income increases in value, the change in children's behaviors and language were decreases in value with P value (2-tailed) was 0.007 and Pearson Correlation -0.542. which mean we have a reverse relationship between Economic level amount and change the children's behaviors and language as shown in Table 5.

One of the main recommendations that could be applied to help parents protect and improve children's behaviors and language in quarantine condition based on simple opinion is increasing the role of community pharmacies inpatient counseling and especially towards children after giving courses to pharmacists in child psychology and behavior. This could help the family protect them, children, from any changing in their behaviors and language in such conditions in the future if the world refaces such the same problem as community pharmacies showed successful results in many fields of disease management. In Belgium, for example, asthma patients prescribed inhaled corticosteroids were given two follow up appointments with a community pharmacist Table 6. This program showed to benefit up to Thirty-six thousand patients, with the service potentially expanding to other chronic conditions. Another example is in Ireland, where community pharmacists gave over 50,000 patients (a tenth of people vaccinated) the flu vaccine in 2014. In 2015, owing to the scheme's success, the pharmacist remit was increased to include pneumococcal and shingles vaccines (Blair and Menon, 2018).

## CONCLUSION

COVID-19 has become a global crisis. It shows a negative impact on the health care system and economy of many countries besides a large number of people infected worldwide and died due to this pandemic. The COVID-19 also showed a negative impact on healthy people in the psychological and social area. Our results showed clearly that the COVID-19 pandemic has a negative impact on children's behaviors and language, where stress and isolationism has a higher effect and economic level (monthly Income) of families have significant impact.

The recommendation of this work is to increase the role of community pharmacies inpatient counseling and especially towards children, after giving courses to the pharmacist in child psychology and behavior, This could be helpful to family to protect them, chil-

dren, from any changing in them behaviors and language in such condition in future if world reface such a same problem.

The COVID-19 pandemic show clearly how simple organisms "virus" could produce a negative impact on our lives even we live in a highly developed century (Technology age).

## Funding Support

The authors declare that they have no Funding Support for this study.

## Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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