Original Article

Parents' Knowledge and Attitudes toward Seasonal Childhood Influenza Vaccination for Children Aged below 5 Years in Hilla City/Iraq

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Abstract

Background: Seasonal influenza is an acute, highly infectious viral infection. Immunization of the children can protect not only the children but also the community from seasonal influenza. Parents' knowledge and attitudes can play an important role in the immunization coverage. **Objectives:** To assess parents' knowledge and attitudes toward childhood seasonal influenza vaccination for children aged below 5 years in Hilla governorate and to determine the relationship between them and socioeconomic status. **Materials and Methods:** A cross-sectional study was done on 288 parents who visited a six randomly selected primary health care centers in Hilla city and who had children aged between (6 and 59) months. Data were collected from May 1, 2018, to August 4, 2018, by interviewing parents using a questionnaire form after taking their consent, including a full assessment of parents' attitude and knowledge toward seasonal childhood influenza vaccination. **Results:** The results showed that 92.7% (n = 260) of the participants had moderate and good knowledge about seasonal childhood influenza vaccination with significant association with mother's education, age, and family income and 88.9% (n = 256) of them had a positive attitude toward the vaccine which was significantly associated with the family residence, the coverage rate of the seasonal childhood influenza vaccine was 30.6%. **Conclusions:** The majority of participants had good and moderate knowledge and a positive attitude toward seasonal childhood influenza vaccination. Higher knowledge level was reported in mothers of younger age. A very low percentage of illiterate mothers had good knowledge. The majority of parents with good knowledge had low family income.

Keywords: Children, influenza vaccine, parents' attitude, parents' knowledge

Introduction

Seasonal influenza is an acute, upper respiratory tract, highly infectious viral infection with the respiratory syncytial virus of the nose, throat, and lungs that affect people of all ages and occurs in late fall, winter, and early spring.[1,2] The spectrum of illness ranges from mild self-limiting disease to serious infection and at times can lead to death, particularly in high-risk individuals.[2,3] Close contact with influenza-infected individuals and their respiratory secretions results in a higher risk of transmission.[4]

The global annual prevalence of influenza is 5%–10% in adults and 20%–30% in children.[4] The World Health Organization estimates that influenza infection is responsible for between 3 and 5 million cases of serious illness and approximately 500,000 cases of deaths globally each year.[4]

All children aged 6 through 59 months are at increased risk for severe complications from influenza and for influenza-related outpatient, emergency department, or hospital visits; however, vaccination to prevent influenza is particularly important for them for 1 year.[5] Vaccine efficacy for healthy adults and most children ranges from 80% to 100%.[1]

Medical staff needs to understand the factors that affect parental views about vaccination because parental attitudes about vaccination are highly associated with rates of childhood

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vaccination.[6] If parents do not view a specific vaccine as necessary or acceptable, vaccination campaigns can be ineffective.[7,8]

Many studies found that parent's knowledge affect their decision to vaccinate their children in which low parent's knowledge leads to a negative attitude and decrease immunization coverage rate, these studies carried out in Iraq and Malaysia.[9,10]

As influenza vaccine is new in Iraq, there are studies about medical staff knowledge about the seasonal influenza vaccine, but little known about parent's attitudes toward this vaccine for children aged below 5 years.[1]

This study aimed to assess parents' knowledge and attitudes toward childhood seasonal influenza vaccination for children aged below 5 years in Hilla city, Iraq, and to determine the relationship between them and socioeconomic status.

Materials and Methods

Study design and setting

A cross-sectional study had been done during the period from May 1, 2018 to August 4, 2018, at Primary health care (PHC) centers in Hilla city (Halif el-Quran, Al-Quds, Al-Kiffl Typical Primary Health Care Center (PHCC), Al-Wardia, Al-Baqir and Al-Qadhia). These six centers were selected by the simple random sampling method. A questionnaire form including full sociodemographic information's and a full assessment of parents' attitudes and knowledge toward childhood seasonal influenza vaccination.[9,11] The data were collected by direct interview with the parents.

Sample size calculation

The sample size estimation was according to the following equation:[12]

Sample size = $(Z\alpha 1/2)^2 P (1 - p)/d^2$

Where;

$Z\alpha$ ½ = is standard normal variant (at 5% type 1 error ($p<0.05$) it is 1.96).

P (75%)[13] = expected proportion based on previous studies or pilot studies.

d = absolute error or precision. So

$$\text{Sample size} = \frac{(1.96)^2 (0.75)(0.25)}{(0.05)^2} = 288$$

Inclusion and exclusion criteria

Inclusion criteria included parents who have a child aged (6–59) month, whereas exclusion criteria included parents' refusal, incomplete filled questionnaire, and nonArabic lingual parents.

Pilot study

Before starting to collect information's, a pilot study carried out for 2 weeks. The pilot study was done in AL-Wardia PHCC from March 14, 2018 to March 28, 2018, aimed to test the validity and reliability of the questionnaire and to estimate the time needed for the collection of data, moreover to find any other difficulties. Modifications were done to the questionnaire according to the pilot study. The pilot study sample took about 20 parents and was excluded from the study sample.

Statistical analysis

The statistical analysis was performed using the SPSS software version 20 (SPSS, IBM Company, Chicago, IL 60606, USA). Continuous variables expressed as mean ± standard deviation, whereas categorical variables expressed as frequencies and percentages. Pearson Chi-square test was used to test the relationship between the categorical variables. $P \leq 0.05$ was considered statistically significant.

Ethical consideration

This study was approved by the Iraqi Council for Medical Specialization; official agreements were taken from the general health directorate in Babylon and from the managers of PHCC; verbal consent was taken from all participants; data were kept confidentially.

Results

The current study consists of 288 parents; 263 (91.3%) females and 25 (8.7%) males; the mean age is 27.7 ± 6.3 with a minimum of 17 years and maximum age of 45 years of the mothers. For the fathers, the minimum age is 19 years and the maximum is 55 years so the mean age is 32.6 ± 7.8. For children, the minimum age is 6 months and the maximum is 58, mean age is 27.3 ± 15.6.

The results showed that 92.7% (n = 267) of the participants had moderate and good knowledge about seasonal childhood influenza vaccination, as shown in Figure 1.

There was a significant relationship between knowledge about childhood influenza vaccine and young aged mothers as more than two thirds (67.2%, n = 92) of parents with good knowledge were mothers aged 20–29 years. Furthermore, there was a significant relationship between mother's education and knowledge as only 14.6% and 5.8% of the illiterate mothers

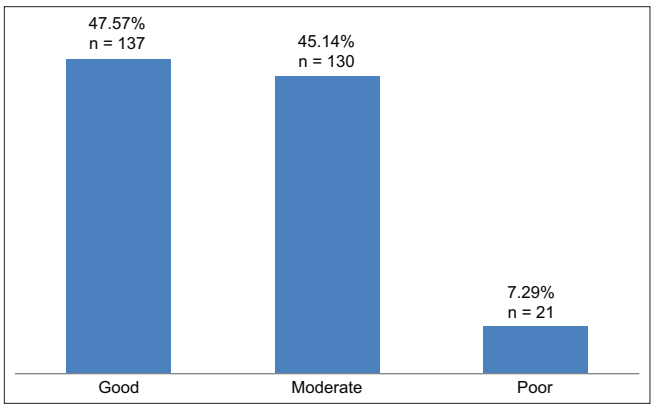

Figure 1: Parents' knowledge about seasonal childhood influenza vaccination

had moderate and good knowledge, respectively, in comparison to 49 (37.7%) with moderate knowledge and 33 (24.1%) with good knowledge of the highly educated mother, whereas there was no significant relation between father age and education with knowledge toward the vaccine. Besides, there was a significant relationship between parents' knowledge and family income as 80.8% and 94.2% of those with moderate and good knowledge was classified as having a middle and low income, respectively, while there was no such significant relation with residence and parent occupation. More details are shown in Table 1.

The majority of parents who participated in the study (about 88.9%, $n = 256$) had positive attitude toward seasonal childhood influenza vaccination.

There were no significant association between parent age, education, occupation and even income with attitude toward vaccine while there was only a significant relationship between family residence and parents' attitude (78.5%, $n = 28$) of those parents with negative attitude living in the urban residence, as shown in Table 2.

In the current study, the coverage rate of seasonal childhood influenza vaccine was 30.6 while the refusal rate was 21.18%. The most common cause of refusal was an issue about the vaccine safety/side effect, as shown in Figure 2.

The study revealed that 79 out 137 (57.7%) of parents with good knowledge and 145 out of 256 (56.6%) of those with a positive attitude toward the influenza vaccine did not their children with a significant statistical association, $P = 0.0001$ and 0.0006, respectively, as shown in Table 3.

Among the 288 parents who participated in the study, 53.8% of them received the information about seasonal influenza vaccine from doctor or nurse, 12.15% from friends or neighbors, 9.7% from posters, 7.29% from Internet, and only 2.08% from newspapers. A small percentage (13.89%) of the participant parents did not hear about influenza vaccine, as shown in Figure 3.

Discussion

Seasonal influenza is an acute, upper respiratory tract highly contagious viral infection.[1] All children aged 6 through 59 months are at high risk for severe complications from influenza.[5] This is one of the few studies to assess parents' knowledge and attitude toward the seasonal influenza vaccine in Iraq.

In this study, the knowledge of parents toward seasonal childhood influenza vaccination as follows: Good knowledge (47.6%), moderate knowledge (45.1%), and poor knowledge (7.3%). This results was compatible with Abu-Rish *et al*., who found that (47.3%) of the participants were considered knowledgeable,[14] while higher knowledge percentage reported by Low *et al*. in Singapore.[15] This difference might be due to difference in the method of data collection which was done by an online survey that might lead to misunderstanding to some questions.[15]

In the present study, good knowledge was found among younger mother age. This finding was compatible with Al-Lela *et al*. in Mosul-Iraq.[16] This can be explained by the fact that mothers in this age group are more in contact with PHCC either for attending the maternal care or child care so that they got more knowledge than other age groups.

Regarding education, there was a significant relationship between mother's education and knowledge as educated mothers significantly had more knowledge than the illiterate mothers and this was similar to study in Mosul.[16]

In addition, there was a significant relationship between parents' knowledge and family income where 80.8% and 94.2% of those with moderate and good knowledge were classified as having a middle and low income respectively. This result was in contrast to a Japanese study, where a high percentage of parents with good knowledge had high family income.[13] This could be explained by the lower income the more susceptible for respiratory tract infection, diarrhea, and nutritional deficiencies making them frequent visitors to PHC center and gain more knowledge.

The majority of the study participants had a positive attitude toward childhood seasonal influenza vaccination (88.9%). This was concomitant to Low *et al*. in Singapore where the general willingness of parents to vaccinate their children was high.[15] and higher than that reported by Abu-Rish *et al*., in Amman-Jordon as 67.3% of parents showed a positive attitude, this might be due to the differences in the source of information's about the vaccine.[14]

While in another study conducted in Pakistan explored that 61.1% of parents had a positive attitude toward influenza

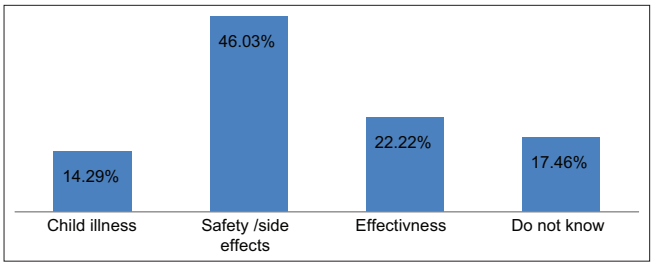

Figure 2: Causes of vaccine refusal

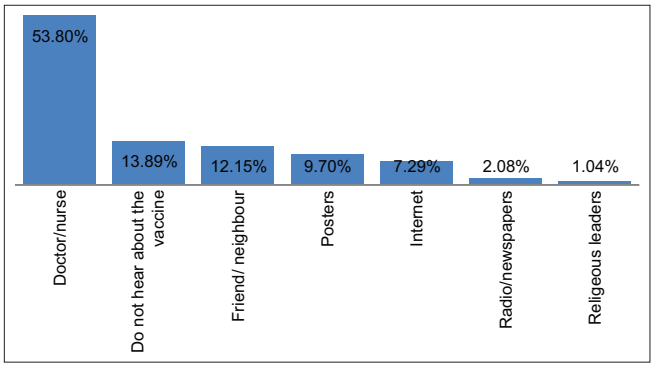

Figure 3: Parent source of information about influenza vaccination

Table 1: Relationship between parents' knowledge and socio-demographic characteristics

Variable	Parent`s knowledge score			Total, *n* (%)	*P*
	Poor (*n*=21; 7.3%), *n* (%)	Moderate (*n*=130; 45.1%), *n* (%)	Good (*n*=137; 47.6%), *n* (%)		
Mothers' age (years)					
<20	3 (14.3)	10 (7.7)	6 (4.4)	19 (6.6)	0.012*
20-29	7 (33.3)	69 (53.1)	92 (67.2)	168 (58.3)	
30-39	7 (33.3)	42 (32.3)	34 (24.8)	83 (28.8)	
40-45	4 (19.0)	9 (6.9)	5 (3.6)	18 (6.2)	
Mothers' education					
Illiterate	3 (14.3)	19 (14.6)	8 (5.8)	30 (10.4)	0.020*
Primary	7 (33.3)	40 (30.8)	57 (41.6)	104 (36.1)	
Intermediate	3 (14.3)	13 (10.0)	21 (15.3)	37 (12.8)	
Secondary	0	9 (6.9)	18 (13.1)	27 (9.4)	
Higher education	8 (38.1)	49 (37.7)	33 (24.1)	90 (31.2)	
Occupation of mother					
Employed	6 (28.6)	44 (33.8)	30 (21.9)	80 (27.8)	0.093
Housewife	15 (71.4)	86 (66.2)	107 (78.1)	208 (72.2)	
Fathers' age (years)					
<30	7 (33.35)	49 (37.7)	67 (48.9)	123 (42.7)	0.063
30-39	6 (28.6)	58 (44.6)	45 (32.8)	109 (37.8)	
40-49	6 (28.6)	21 (16.2)	22 (16.1)	49 (17.8)	
50-55	2 (9.5)	2 (1.5)	3 (2.2)	7 (2.4)	
Fathers' education					
Illiterate	3 (14.3)	12 (9.2)	11 (8)	26 (9)	0.569
Primary school	3 (14.3)	35 (26.9)	47 (34.5)	85 (29.5)	
Intermediate	5 (23)	21 (16.2)	23 (16.8)	49 (17)	
Secondary	1 (4.8)	10 (7.7)	13 (9.5)	24 (8.3)	
Higher education	9 (42.9)	52 (40)	43 (31.4)	104 (38.1)	
Fathers' occupation					
Employed	6 (28.6)	59 (45.4)	52 (38)	117 (40.6)	0.085
Free worker	15 (71.4)	71 (54.6)	85 (62)	171 (59.4)	
Family residence					
Urban	18 (85.7)	80 (61.5)	84 (61.3)	182 (63.2)	0.085
Rural	3 (14.3)	50 (38.5)	53 (38.7)	106 (36.8)	
Family income					
High	1 (4.8)	25 (19.2)	8 (5.8)	34 (11.8)	0.006*
Middle	12 (57.1)	55 (42.3)	59 (43.1)	126 (43.8)	
Low	8 (38.1)	50 (38.5)	70 (51.1)	128 (44.4)	

*p value is significant

vaccine, this might be related to the negative perception of the parents toward the vaccine need.[4]

There was a significant relationship between family residence and parents' attitude as 87.5% of those with negative attitude living in an urban-dwelling, although they had more knowledge than a rural one; this might be attributed to the fearing from the side effect of the vaccine.

As the level of education increases, one expects that the person will adopt a positive attitude, however, in the present study, there was no significant relationship between parents' attitude and educational level of parents which was in contrast to what was found in Pakistan as the positive attitude was significantly associated with parents' level of education.[4] This paradox frequently occurs in our society which means that a higher level of education does not necessarily associate with a positive attitude.

The results revealed that the coverage rate of immunization with influenza vaccine was 30.6%, which was nearly corresponding to the coverage rate founded by Low *et al*. (32%),[15] whereas our coverage rate was higher than what reported by studies from Pakistan and Sydney Australia, as there were only 6.6% and 8% of children, received an influenza vaccine, respectively.[4,17] However, the Japanese study estimated that 75% of their children were immunized with seasonal influenza vaccine.[13] This might be explained by the shortage and the temporary availability of the influenza vaccine in Iraq.

In our study, the refusal rate was 21.18% which was much lower than what reported in Kenya (57.7%),[18] this might be

Table 2: Relationship between parents' attitude and sociodemographic characteristics

Variable	Parents` attitude		Total	*P*
	Positive (*n*=256), *n* (%)	Negative (*n*=32), *n* (%)		
Mothers' age (years)				
<20	18 (7.0)	1 (3.1)	19 (6.6)	0.101
20-29	152 (59.4)	16 (50.0)	168 (58.3)	
30-39	73 (28.5)	10 (31.2)	83 (28.8)	
40-45	13 (5.1)	5 (15.6)	18 (6.2)	
Mother`s education				
Illiterate	27 (10.5)	3 (9.4)	30 (10.4)	0.8
Primary	95 (37.1)	9 (28.1)	104 (36.1)	
Intermediate	33 (12.9)	4 (12.5)	37 (12.8)	
Secondary	24 (9.4)	3 (9.4)	27 (9.4)	
Higher education	77 (30.1)	13 (40.6)	90 (31.2)	
Mother`s occupation				
Employed	71 (27.7)	9 (28.1)	80 (27.8)	0.963
Housewife	185 (72.3)	23 (71.9)	208 (72.2)	
Father's age (years)				
19-29	111 (43.4)	12 (37.5)	123 (42.7)	0.245
30-39	99 (38.7)	10 (31.2)	109 (37.8)	
40-49	41 (16.0)	8 (25.0)	49 (17.0)	
50-55	5 (2.0)	2 (6.2)	7 (2.4)	
Father's education				
Illiterate	23 (9.0)	3 (9.4)	26 (9.0)	0.064
Primary	78 (30.5)	7 (21.9)	85 (29.5)	
Intermediate	48 (18.8)	1 (3.1)	49 (17.0)	
Secondary	21 (8.2)	3 (9.4)	24 (8.3)	
Higher education	86 (33.6)	18 (56.2)	104 (36.1)	
Father's occupation				
Employed	106 (41.4)	11 (34.4)	117 (40.6)	0.445
Free worker	150 (58.6)	21 (65.6)	171 (59.4)	
Family residence				
Urban	154 (60.2)	28 (87.5)	182 (63.2)	0.002*
Rural	102 (39.8)	4 (12.5)	106 (36.8)	
Family income				
High	30 (11.7)	4 (12.5)	34 (11.8)	0.459
Middle	109 (42.6)	17 (53.1)	126 (43.8)	
Low	117 (45.7)	11 (34.4)	128 (44.4)	

*p value is significant

related to higher knowledge of our participants toward the seriousness of influenza. The most common cause of refusal was an issue about the vaccine safety/side effect and this was concomitant to Abu-Rish *et al*., who recorded that the most common cause of the refusal was vaccine safety.[14]

Regarding the source of parents' information about the influenza vaccine, more than half of the participants got their information from doctor or nurse (53.82%), which is consistent with what found in Pakistan study[4] and inconsistent with what founded in Amman-Jordon as the Jordanian parents reported that the source of their information's toward the vaccine was the newspaper.[14] this might be related to more frequent visits of our participants to the PHC center. A small percentage (13.89%) of the participant did not hear about the influenza vaccine. This was in contrast to a study that was carried in Pakistan in which very few parents were familiar with vaccine availability; this might be related to more counselling of our medical staff to parents visiting PHC center.[4]

A small percentage (13.5%) of the parents did not know whether their child immunized with the influenza vaccine or not, this might be related to whether the source of information whether from father or mother. In this study, that was carried out in Pakistan, this percentage was higher (30% of parents were not sure that their children receive influenza vaccine). In our study, most of the information was taken from the mothers which might explain this difference.[4]

Surprisingly, 57.7% of those parents who had good knowledge, and 56.6% from parents who had positive attitude their children did not immunize their children; this could be explained by many doubts toward the vaccine safety.

Table 3: Relationship between child's immunization status with influenza vaccine and parents' knowledge and attitude

	Parents' knowledge			Total, *n* (%)	*P*
	Poor (*n*=21), *n* (%)	Moderate (*n*=130), *n* (%)	Good (*n*=137), *n* (%)		
Immunization					
Yes	4 (19)	37 (28.5)	47 (34.3)	88 (30.6)	0.0001*
No	7 (33.3)	75 (57.7)	79 (57.7)	161 (55.9)	
Don't know	10 (47.6)	18 (13.8)	11 (8)	39 (13.5)	
	Parents' attitude			Total, *n* (%)	*P*
	Positive (*n*=256), *n* (%)		Negative (*n*=32), *n* (%)		
Immunization					
Yes	82 (32)		6 (18.8)	88 (30.6)	0.006*
No	145 (56.6)		16 (50)	161 (55.9)	
Don't know	29 (11.3)		10 (31.2)	39 (13.5)	

*p value is significant

Conclusions

The majority of participants had good and moderate knowledge about seasonal childhood influenza vaccination and a positive attitude. Higher knowledge level was reported in mothers of younger age. A very small percentage of illiterate mothers had good knowledge. The majority of parents with good knowledge had low family income.

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Conflicts of interest

There are no conflicts of interest.

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