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Evaluation of Health Care Workers' Knowledge about Acute Flaccid Paralysis in Najaf City/Iraq

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ABSTRACT

Background: *Acute Flaccid Paralysis (AFP) is a severe clinical symptom that could have a variety of different causes. Acute flaccid paralysis (AFP) is a clinical symptom characterized by the sudden onset of weakness or paralysis and decreased muscle tone (less periodic muscles of the respiratory tract). It occurs in 0.1–1% of infected cases and is the most frequent clinical manifestation of acute poliovirus infection.* ***Methods****: cross-sectional descriptive study was carried out in 18 primary healthcare centers located in 2 districts of Najaf city, using the method of simple random sampling technique. The research study includes 210 primary healthcare workers. A questionnaire was used to evaluate the acute flaccid paralysis knowledge of healthcare workers. Data collection from November 1, 2023, to the of February 31, 2024.* ***Results****: The study revealed that the level of knowledge among healthcare workers about acute flaccid paralysis was moderate. Additionally, a statistically significant link was observed between the healthcare workers' levels of education and their knowledge (P < 0.00), Considering years of experience, the findings indicate that a greater proportion of healthcare workers (34%) with <1-5 years of experience had strong knowledge compared to those with other levels of experience (P<0.005).* ***Conclusion:*** *Healthcare workers showed a moderate level of knowledge regarding Acute Flaccid Paralysis information, and the knowledge was strongly related to the healthcare worker's levels of education and years of experience.*

Keywords: Primary health care, Acute Flaccid Paralysis, Healthcare Worker's .

Article Information

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INTRODUCTION

Poliomyelitis is an acute viral infection caused by the RNA virus. It is primarily an infection of the human alimentary tract but the virus may infect the central nervous system in a very small percentage (1%) of cases resulting in varying degrees of paralysis, and possibly death [(1)]. As the gold standard for poliomyelitis case detection, acute flaccid paralysis (AFP) surveillance is an important method for monitoring progress toward the global eradication goal of poliomyelitis [(2)]. AFP surveillance helps to detect reliably areas where poliovirus transmission is occurring.

Thus, AFP surveillance data will guide targeted immunization activities in areas with continued wild poliovirus circulation[(3)]. The World Health Organization (WHO) defined an AFP case "as a child presenting with sudden onset of floppy paralysis or muscle weakness due to any cause, or any person of any age with paralytic illness if poliomyelitis is suspected by a clinician" [(4)].Iraq is still free from confirmed wild poliovirus infection since the last case of poliomyelitis in 2014. When a single child remains infected, the children of the country become at risk of poliovirus infection. As global eradication of polio fails

this strongholds could result in 200 ,000 new cases every year within 10 years, all over the world[5].

Aim of study

To evaluate health workers' knowledge regarding Acute flaccid paralysis (AFP) in primary healthcare centers Najaf city.

METHODS

Subjects and Methods

This study was a descriptive, cross-sectional study conducted at 18 randomly selected Primary Health Centers in Najaf city. Data collection started from 1 November 2023 to 1 February 2024 the time allocated to collecting data was two days for each primary health care center.

Sampling Technique: Najaf city has 31 primary healthcare centers dispersed throughout two primary healthcare sectors (North sector and south sector). 18 centers were picked at random from all sectors using the simple random approach from each sector based on the sector aggregation map.

Study population: The population includes all health workers (both genders) who work in immunization units (4), communicable disease unit(2), Integrate management new-borns and child health (IMNCH) unit(4), pharmacy unit(3) and medical unit(2). The study population was 465, calculated according to the standard structure of the above units in each health care center. The sample size for healthcare workers was (210) persons. The sample size was selected Depending on the attached equation to choose the appropriate sample size (6). Sample size calculator:

$$n = \frac{N \cdot z^2 \cdot p \cdot (1-p)}{E^2 \cdot (N-1) + z^2 \cdot p \cdot (1-p)}$$

Where: N(Population size) ,z(Z-score corresponding to the desired confidence level) p (Estimated proportion of the population) , E (Margin of error) . The selection of this convenience sample adhered to specific criteria outlined as follows:

Inclusion criteria

HealthCare workers (both sex and all age groups) who work in the IMNCH unit, immunization units, communicable disease unit, pharmacy unit and medical unit in the healthcare center where verbal consent was taken and the purpose of the study was clarified.

Exclusion criteria

1. Staff who refused the interview.
2. All healthcare workers who did not have an administrative order to work in the relevant units.

Data collection technique:

Data were collected through questionnaire was prepared based on the information from the acute flaccid paralysis Program of the Iraqi Ministry of Health and the World Health Organization as well as the opinion and approval of experts[7].

Assessment of HCWs about knowledge for (AFP)

In this section, a 2-point Likert scale scoring system was used for each question in all four domains ranging from 1 (Disagree), 2 (Agree) and according to the mean of the score for each question, we found the final assessment for this question according to Table (1)[8].

Table (1) 2-Point Likert Scale

Assessment	Range
poor	1.00 -1.50
good	1.51-2.00

Statistical Analysis

The data analysis was conducted using IBM-26. The data were presented using basic statistical measures such as percentage, frequency, standard deviation, and mean. Chi-square is used to detect any association and a p-value of 0.05 or less considered significant.

RESULTS

Sociodemographic characteristics of healthcare workers

The following Table (2) provides a summary of the study group's characteristics, indicating that 59.5% of the workers were aged between 20 and 29. Regarding the residents, almost all of the respondents resided in cities, accounting for 89.5% of the healthcare workers. Furthermore, healthcare workers, specifically 46.2%, obtained a diploma degree. The majority of healthcare workers are female, comprising 71% of the workforce, The majority of healthcare workers are married, accounting for 66.7% of the total. Regarding the years of experience, most healthcare workers have served from (<1-5) years with percentage (36.7%).

The data in Table (3) presents Knowledge of health care workers about general information for AFP. The data reveals that the highest average score was given to the question 1 (Acute flaccid paralysis (AFP) is a clinical syndrome characterized by rapid onset of weakness, including(This is weakness in breathing and swallowing, and progresses to maximum severity over several days to weeks.) with mean and SD (1.91± 0.28), followed by question 3 (Humans are the only known host of the polio) with (1.87 ± 0.34) with agree by 91.4%,

86.7%respectively. While the lowest average was favored to the question 7 (Up to 95% of polio infections are overt) with (1.56 ± 0.49), with agree by 55.7%.

Knowledge of health workers about case identification or surveillance of acute flaccid paralysis

Table (4) presents Knowledge of health care workers about basic information for AFP. The data reveals that the highest average score was given to the question 2 (Acute flaccid paralysis (AFP) surveillance system is one strategy used to eradicate polio? When you detect a case of AFP) with mean and SD (1.82±0.38), followed by question 6 (Acute flaccid paralysis monitoring remains operational even after polio has been completely eradicated from the country)with (1.56± 0.50) with agree by82.4%,55.7% respectively. While the lowest average was favored to the question 5 (Have you discovered acute flaccid paralysis earlier?) with (1.22±0.41), with agree by 21.9.

Knowledge of health care workers about signs and symptoms for Acute flaccid paralysis

Table (5) presents Knowledge of health care workers about sing and symptoms for AFP. The data reveals that the highest average score was given to the question 5 (Acute flaccid paralysis is accompanied by heaviness in the extremities) with mean and SD (1.83± 0.37), followed by question 2 (The patient is unable to stand) with (1.81±0.39)with agree by 83.3%,81.4%respectively. While the lowest average was favored to the question 7 (Facial muscle paralysis may not occur) with (1.37±0.48), with agree by 75.2%.

Knowledge of health care workers about differential diagnosis for Acute flaccid paralysis

Table (6) presents the Knowledge of healthcare workers about differential diagnosis for AFP. The data reveals that the highest average score was given to the question 1(Polio) with mean and SD (1.97± 0.18), followed by question 8 (Partial paralysis occurs) with (1.72± 0.45) with agree by 96.7%,72.4%respectively. While the lowest average was favored to the question 2 (Glin-Barré Syndrome (GBS)) with (1.47±0.50), with agree by 47.1%.

Sources of knowledge about Acute Flaccid Paralysis (AFP)

Figure (1) presents the distribution of knowledge sources about Acute Flaccid Paralysis (AFP) among the study participants. The data indicate that 26% of participants rely on school curricula as their primary source of information about AFP**.** Health workers are the second most cited source, with 21% of participants obtaining their information from these professionals. The least utilized source, with only 4% of participants shows that traditional media play a minimal role in disseminating information about AFP.

Relationship of Overall Knowledge of Health care workers about Acute flaccid paralysis with Sociodemographic Characteristics.

Table (7) clarify that there is no relationship between Overall Knowledge of AFP and Sociodemographic Characteristics (Age group, Gender, married state) where is (P = 0.300, 0.836, 0.308, respectively) **.**

Regarding place, the findings indicate that 81.4% of urban of healthcare workers had a higher level of knowledge compared to 6.2% of rural of healthcare workers. The observed difference was determined to be statistically significant with a p-value of 0.000**.**

Addressing educational levels, the findings indicate that a greater proportion of healthcare workers with a diploma, which is 41.4%, had strong knowledge compared to those with other levels of education (primary, bachelor's, master's, PhD), which have percentages of 7.6%, 36.7% ,1.9% and 0%, respectively, the observed difference was determined to be statistically significant with a p-value of 0.000 **.**

Regarding Specialists, the findings indicate that a greater proportion of healthcare workers with a assist medical., which is 34.3%, had strong knowledge compared to those with other levels Specialists (nurse, pharmacy, technical medical, physician), which have percentages of 19.0%, 19.0%,15.2% and 0%, respectively, The observed difference was determined to be statistically significant with a p-value of 0.000 **.**

Considering years of experience, the findings indicate that a greater proportion of healthcare workers (34%) with <1-5 years of experience had strong knowledge compared to those with other levels of experience (5-10, 10-15, 15-20, 20-25, 25-30, 30-35), which have percentages of (29%,12%,7%,1%,4%,1%). respectively, a statistically significant difference was observed, with a p-value of 0.005.

Table (2) Characteristics of Health Care workers (HCWs)			
variables		F	%
Age group	20-29 y	125	59.5%
	30-39 y	43	20.5%
	40-49 y	32	15.2%
	above 50	10	4.8%
Gender	female	149	71.0%
	male	61	29.0%
place	urban	188	89.5%
	rural	22	10.5%
married state	single	66	31.4%
	married	140	66.7%
	widow	4	1.9%
Education level	primary	26	12.4%
	diploma	97	46.2%
	bachelor	81	38.6%
	master	4	1.9%
	PhD	2	1.0%
specialty	assist medical.	78	37.1%
	nurse	52	24.8%
	pharmacy	42	20.0%
	technical medical	36	17.1%
	physician	2	1.0%
Years of experience	<1-5	77	36.7%
	5-10	72	34.3%
	10-15	30	14.3%
	15-20	17	8.1%
	20-25	2	1.0%
	25-30	9	4.3%
	30-35	3	1.4%

Knowledge of health care workers about general information for Acute flaccid paralysis

Table (3) Knowledge of health care workers about general information for Acute flaccid paralysis							
	Item	Agree		Disagree		Mean	Std
		F	%	F	%		
1	Acute flaccid paralysis (AFP) is a clinical syndrome characterized by rapid onset of weakness including This is weakness in breathing and swallowing, and progresses to maximum severity over several days to weeks.	192	91.4%	18	8.6%	1.91	0.28
2	Polio is an acute viral infection caused by an RNA virus	181	86.2%	29	13.8%	1.86	0.36
3	Humans are the only known host of the polio	182	86.7%	28	13.3%	1.87	0.34
4	The polio virus is transmitted from person to person through feces to the mouth and this is the most important way of transmitting the virus, but the mouth-to-mouth route may be a cause in some cases	165	78.6%	45	21.4%	1.79	0.44
5	*Poliovirus is highly contagious, and cases are most contagious 3 to 12 days before and after the onset of symptoms	140	66.7%	70	33.3%	1.67	0.46
6	The incubation period for polio is 6 to 20 days with a range of 3 to 35 days.	179	85.2%	31	14.8%	1.85	0.40
7	*Up to 95% of polio infections are overt	117	55.7%	93	44.3%	1.56	0.49
Total score		1.78±0.39		good			

* Reverse question

Table (4) Knowledge of health workers about case identification or surveillance of acute flaccid paralysis							
	Item	Agree		Disagree		Mean	Std
		F	%	F	%		
1	Acute flaccid paralysis (AFP) surveillance system is one strategy used to eradicate polio When you detect a case of AFP?	173	82.4%	37	17.6%	1.82	0.38
2	do you know where to report it?	98	46.7%	112	53.3%	1.47	0.50
3	Do you know the person responsible for collecting a stool sample to investigate AFP at your institution?	76	36.2%	134	63.8%	1.36	0.48
4	Have you discovered acute flaccid paralysis earlier?	46	21.9%	164	78.1%	1.22	0.41
5	*Acute flaccid paralysis monitoring remains operational even after polio has been completely eradicated from the country	117	55.7%	93	44.3%	1.56	0.50
6	Do you know the age criteria by which acute flaccid paralysis can be reported?	101	48.1%	109	51.9%	1.48	0.50
Total score		1.47±0.46		poor			

* Reverse question

Table (5) Knowledge of health care workers about signs and symptoms for Acute flaccid paralysis

	Item	Agree		Disagree		Mean	Std
		F	%	F	%		
1	Sudden paralysis may occur	170	81.0%	40	19.0%	1.78	0.42
2	The patient is unable to stand	171	81.4%	39	18.6%	1.81	0.39
3	*Ability to walk	87	41.4%	123	58.6%	1.59	0.49
4	The patient loses the ability to move his legs and arms	184	87.6%	26	12.4%	1.80	0.40
5	Acute flaccid paralysis is accompanied by heaviness in the extremities	175	83.3%	35	16.7%	1.83	0.37
6	The patient's inability to sit	151	71.9%	59	28.1%	1.62	0.49
7	*Facial muscle paralysis may not occur	158	75.2%	52	24.8%	1.37	0.48
8	Neck muscle paralysis may occur	171	81.4%	39	18.6%	1.79	0.41
Total		1.69±0.43		good			

* Reverse question

Table (6) Knowledge of health care workers about differential diagnosis for Acute flaccid paralysis

	Item	Agree		Disagree		Mean	Std
		F	%	F	%		
1	Polio	203	96.7%	7	3.3%	1.97	0.18
2	Glin-Barré Syndrome (GBS)	99	47.1%	111	52.9%	1.47	0.50
3	Transverse myelitis	139	66.2%	71	33.8%	1.66	0.47
4	Encephalomyelitis	150	71.4%	60	28.6%	1.71	0.45
5	Tuberculous meningitis	136	64.8%	74	35.2%	1.65	0.48
6	Diseases of neuromuscular connections	146	69.5%	64	30.5%	1.70	0.46
7	*Increased blood potassium	96	45.7%	114	54.3%	1.54	0.50
8	Partial paralysis occurs	152	72.4%	58	27.6%	1.72	0.45
Total		1.67±0.43		good			

* Reverse question

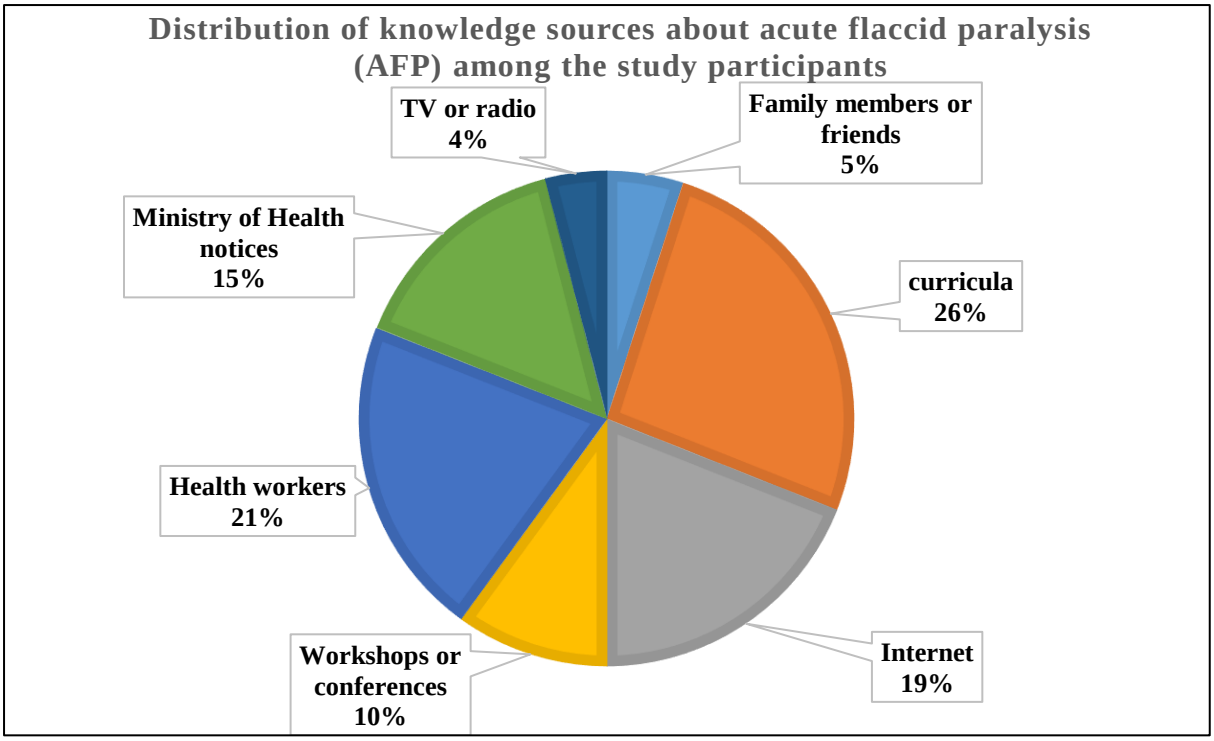

Figure (1): Distribution of knowledge sources about acute flaccid paralysis (AFP).

Table (7) Relationship of Overall Knowledge of Health care workers about Acute flaccid paralysis with Sociodemographic Characteristics.

variables		agree		disagree		P. value
		F	%	F	%	
Age group/years	20-29 y	112	53.3%	13	6.2%	0.300**
	30-39 y	36	17.1%	7	3.3%	
	40-49 y	26	12.4%	6	2.9%	
	above 50y	10	4.8%	0	0.0%	
	Total	184	87.6%	26	12.4%	
Sex	female	131	62.4%	18	8.6%	0.836**
	male	53	25.2%	8	3.8%	
	Total	184	87.6%	26	12.4%	
Place	urban	171	81.4%	17	8.1%	0.000*
	rural	13	6.2%	9	4.3%	
	Total	184	87.6%	26	12.4%	
marital state	single	60	28.6%	6	2.9%	0.308**
	marital	120	57.1%	20	9.5%	
	widow	4		0	0.0%	
	Total	184	87.6%	26	12.4%	
Education level	primary	16	7.6%	10	4.8%	0.000*
	diploma	87	41.4%	10	4.8%	
	bachelors	77	36.7%	4	1.9%	
	master	4	1.9%	0	0.0%	
	PhD	0	0.0%	2	1.0%	
	Total	184	87.6%	26	12.4%	
Specialists	assistant medical.	72	34.3%	6	2.9%	0.000*

Table (7) Relationship of Overall Knowledge of Health care workers about Acute flaccid paralysis with Sociodemographic Characteristics.						
variables		agree		disagree		P. value
		F	%	F	%	
	nurse	40	19.0%	12	5.7%	
	pharmacy	40	19.0%	2	1.0%	
	technical medical	32	15.2%	4	1.9%	
	physician	0	0.0%	2	1.0%	
	Total	184	87.6%	26	12.4%	
Years of experience	<1-4	71	34%	6	3%	0.005*
	5-9	61	29%	11	5%	
	10-14	25	12%	5	2%	
	15-19	15	7%	2	1%	
	20-24	2	1%	0	0%	
	25-29	9	4%	0	0%	
	>30	3	1%	0	0%	
	Total	184	87.6%	26	12.4%	
	* Significant at level (P<0.05). ** Non-Significant at level (P>0.05).					

DISCUSSION

The study found that 59.5% of healthcare workers are aged between 20 and 29, indicating a predominantly young workforce. This trend is similarly observed in Al-Najaf (2023)[9]reported that the majority of healthcare workers are under 30. This is due to the health progression system, which allows employees assigned to hospitals to work for two years in health centers. The study's finding that 46.2% of healthcare workers have diploma degrees is consistent with study in Thi-Qar Governorate, Iraq(2023)[10] the highest percentage (40.3%) of HCWs had a diploma . While there are more graduates from medical institutes in Iraq than from colleges due to the fact that the institutes were opened earlier than the colleges. The study found that 71% of healthcare workers are female, consistent with study in Duhok province, Iraq(2023) [11] that found female more than male in health care workers. female like to work in health centers due to the work environment of the center, as most of my clients are pregnant women and children, as the community nature does not prefer female to come into contact with male at work. The study demonstrates that 66.7% of healthcare workers are married, a figure that is consistent with the findings of other regional studies. In Iraq(2024)[12]A majority of the participants, specifically 59%, were found to be married, attributing this to the social and cultural significance of marriage in the region. The study's finding that 36.7% of healthcare workers have less than five years of experience is consistent with the youthful composition of the healthcare workforce in Iraq. Similarly, study in Thi-Qar Governorate, Iraq(2023) [13]observed that the (66%) of healthcare workers in Iraq had less than five years of experience.

The study found that the knowledge level of health workers about general information was good , which is similar to a previous study in Mwenezi district, Masvingo, 2018[14] where most participants were found to have good knowledge about general knowledge for AFP . General knowledge questions are from the curriculum of medical institutes and college. The percentage about definition of AFP

case(91.3%) are known , this results agree with other study in Gokwe North district, Zimbabwe [15]which found (97.6%) responded that the AFP case definition is easy to understand. Regarding the term polio as an acute viral infection, 86% of participants agreed, which is in line with another study in Iraq 2019 [16] that reported 71% agreement. Regarding the incubation period, 85% of health workers answered correctly, while this is not consistent with a previous study in Iraq 2019[16]that found 38% of participants answered correctly about the incubation period for polio. Knowledge about the basic surveillance of acute flaccid paralysis was poor, which is consistent with another study in [17] that found the level of knowledge of workers about the basics of surveillance for communicable diseases to be poor. This is because most health workers will not work in the acute flaccid paralysis surveillance unit. A small percentage (41.4%) of health workers are adequately trained in AFP surveillance, which has a negative impact on system performance. This study result disagree with other study done in Gokwe North district, Zimbabwe [18]which found (83.7%) respondents were not trained on AFP surveillance. As for the workers' knowledge of where to report a case if it is detected, (47%) knew, which is not consistent with another study in North-East Nigeria (2019) [17] that found that (73%) of workers knew where to report.48% of health workers knew the age criteria for diagnosing acute flaccid paralysis, which is inconsistent with another study in North-East Nigeria (2019) [17] his finding that 15% knew the target age for diagnosing acute flaccid paralysis. Regarding AFP surveillance system as one of the strategies use for polio eradication this results percentage showed (17.6%) are disagree. This study result agree with other study done in Diyala governorate [19] showed (32%) don't know this strategy. The health worker were not aware the target rate of AFP were accounted (51.9%).This result agree with other study done in in Diyala governorate [19]which found (42%) of the respondents were not aware that the targeted age group for AFP surveillance. Health workers' knowledge about the symptoms of acute flaccid paralysis was good, which is consistent with another study in Sudan, 2021[20] that found 98% of participants had good knowledge about case definition of acute flaccid paralysis. This reflects the health authorities' interest in educating health workers about the signs and symptoms of acute flaccid paralysis and holding seminars. Knowledge of health care workers about the differential diagnosis of acute flaccid paralysis percentage was good. This study results agree with study done in Edo state, Nigeria [21] which found (50%) of surveillance officers respectively could mention all seven AFP differential diagnosis stated in the AFP surveillance guidelines. The results showed that there is no association between age, sex, and marital status with workers' knowledge of acute flaccid paralysis. This is similar to study in Nigeria.(2024) [22] finding that there is no significant association between age, sex, and marital status with workers' knowledge of acute flaccid paralysis. The results showed that there is a significant difference between specialization and education level with workers' knowledge of acute flaccid paralysis. This is similar to study in Najaf Al-Ashraf City–Iraq(2024) [23] showed that there is a relationship between specialization and educational level with workers' knowledge of polio and the polio vaccine. Medical assistants are the most knowledgeable due to the nature of their study focused on communicable diseases and their surveillance. There is a relationship between years of experience and knowledge, where the least experienced from 1-4 years are the most knowledgeable, and this is not consistent with another study conducted in the Kurdistan Region of Iraq[24]. New

employees have knowledge of what they have studied, and since health centers have not detected cases of acute flaccid paralysis, they have not been refreshed their information.

CONCLUSION

1. Health workers' knowledge about general information, symptoms and signs, and differential diagnosis of acute flaccid paralysis was good.
2. Health workers' knowledge of basic information regarding to surveillance for acute flaccid paralysis was poor.
3. There is a significant relationship between specialization, education level and years of experience and health workers' knowledge about acute flaccid paralysis**.**
4. Curriculum serves as the primary source of knowledge about acute flaccid paralysis for health workers**.**

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Ethical approval

The present study Which is conducted by authors (Hala J. Jasim, Naja H. Hassan.) was approved by the local Department of Community Health Department committee.

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