Effectiveness of Cholera Infection Education Program on Teachers' Knowledge at Secondary Schools in Bagdad City

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Abstract- **Objectives:** To assess of Teachers' Knowledge towards cholera infection control at Secondary Schools in Baghdad City.

Methodology: A Quantitative research uses a quasi-experimental design was conducted, included (24) primary school,(12) in Al Rusafa sector, and (12) in Al Karkh sector, The study is carried out from October 20th 2015 to June 5th 2016, to assess teachers' knowledge about cholera infection control in the secondary schools in Baghdad City. A cluster sample of (60) teachers (males and females) were selected. An educational program has been constructed and applied with an approach of pre-test and post-test for the study and control groups. A questioner format was used for data collection. The validity of questioner was estimated through a penal of experts related to the field of study, and its reliability was estimated through a pilot study was carried out on 21th February up to the 25th February 2016 and it was conducted on (10) teachers who were selected purposively from the secondary schools in Al- Karkh sector in Baghdad City.Data were analyzed through the application of descriptive and inferential statistical analysis.

Results: The results of the study indicated that (66.67%) of teachers in study and control groups are female. Their ages constitute (33.33%) in the study groups, ranging between (40 – 49) years old and (40.0%) in control groups, ranging between (30 – 39) years old. As for the marital status, the majority of teachers are married (60.0%); (66.66%) in the study and control groups respectively. Concerning their educational level, the majority of teachers are college graduates in the study and control groups. Regarding the years of employment in teaching, most of the teachers have years' experience ranging between (11 – 15) years (33.33%) and between (16 – 20) years (26.67%) in control groups. Regarding information sources (46.67%); (60.0%) respectively in the study and control groups obtain from Internet.The results of this study indicate that, teachers' knowledge was poor (in adequate knowledge) towards cholera infection in Baghdad City at Secondary Schools

Conclusion: The results of the study represent that the teachers in the study group benefited from the implementation of the health educational program; however, their knowledge towards cholera infection control was adequately improved and developed. Concerning teachers' knowledge, the results show that there was a good level of knowledge for the study group after the implementation of health educational program concerning their knowledge towards cholera infection control and prevention.

.   **Recommendations**: The study recommends that there is a need for cooperation between the Ministry of Health and the Ministry of Education on writing a book systematically for secondary schools about the nature of the transitional diseases and how to control. Emphasis on continuous sessions concerning cholera infection control for teachers in all secondary schools in Baghdad City. Increasing health awareness about cholera infection throughout multiple media facilities, such as radio, television, and magazines. Awareness programs related to water treatment, water quality and importance of flushing toilets should be carried out in the rural areas to improve the status of the public health.

Index Terms- Effectiveness, Knowledge, Educational program,Cholera infection.

I. INTRODUCTION

Cholera can be a serious enteric condition brought on by that intake with bacteria Vibrio cholerae obtained in fecal contaminated water and foodstuff. Mostly known to cause not sufficient entry to protected mineral water together with adequate cleanliness, it's have an impact on may be much more striking with aspects the place fundamental green infrastructures are generally upset and are generally killed. Areas experiencing sophisticated emergencies are generally really susceptible to cholera breakouts. Massive displacement of internally displaced persons (IDPs) and refugees to help already stuffed options, the location where the supply with potable mineral water together with cleanliness is usually tricky, makes up additionally some sort of associated risk issue. With end result, it can be with vital relevance so as to use adequate monitoring info to help keep an eye on that trend in the episode together with to do position acceptable treatment activities Coordination in the several vital included is important, together with Environment wellness corporation World health organization WHO necessitates that synergy off to help restrict the consequence with cholera with populations (WHO, 2008).

It really is caused by an enterotoxin that influences the small intestine. The disease manifests through nausea and excessive vomiting in the early on course of illness. If it is not treated, it can cause rapid dehydration, acidosis, circulatory collapse, hypoglycemia in children, and renal failure. In many instances, infection is asymptomatic or causes mild diarrhea, especially with organisms of the El Tor biotype; asymptomatic

carriers can transmit the infection. In severely dried out cases, death may take place within a same day, and the case-fatality rate may exceed 50%. With proper and timely rehydration, the death rate can be less than 1% (Heymann, 2008).

It was eventually primary referred to just by Pacini with 1854 but it surely was initially singled out just by Koch with 1883, a lot of these Organisms are generally facultative anaerobic, really motile, no spore providing germs (Elliot et al., 2001). Waterborne health conditions which include diarrhea, cholera, typhoid or anything else. Employ a robust connection using low income together with unclean natural environment. Low income straightaway affiliates using negative lodging circumstances, across packed property, not enough entry to plenty of thoroughly clean mineral water together with sanitary convenience with fecal waste products, together with cohabitation using internal wildlife that can take people pathogens (Jamison, et al,. 2006).

Vaccination has been seen to make a considerably large influence on the result matters compared to main method to obtain thoroughly clean mineral water. The crucial reason is usually that will in contrast people get thoroughly clean mineral water nevertheless stay subject to condition, vaccinated people would possibly not quite simply agreement that virus together with distribute the idea with. That perseverance together with seasonality in the crisis may be gained via wellness service providers in the virus (Neilan et al., 2010). Environment together with migration together with move signs of an individual (Glenn, 2011).

Punctual substitute with liquid sacrificed is a visitor attraction with procedure with cholera. With regard to delicate and nominal dehydration, liquid substitute can be carried out just by verbal rehydration options. Nevertheless, really badly dried people using stupor, coma, unrestrainable queasiness, and serious stress and fatigue that will stops taking in ought to be rehydrated intravenously (WHO, 2011).

Regulate with cholera usually requires adequate sewage convenience together with acceptable mineral water cleanliness, along with the recognition together with procedure with service providers and reservoirs. On account of the following, hygienic mineral water materials are believed fundamental for any regulate with cholera indication. That indication with cholera and also other diarrhoeal health conditions may be regulated by giving protected mineral water, providing acceptable convenience with excreta together with adjusting hygienic tactics in the people at stake. That guideline these activities usually require politics options together with serious expense with serious money, (Steffen et al., 2003).

Today's public is generally more aware of the environment and its effect on the health and comfort of human beings. In that context, hygiene may best be described as those practices that are conducive to providing a healthy environment. This description incorporates three areas of concern: safety, environmental comfort and stimuli, and infection control. Maintaining cleanliness not only provides comfort and positive stimuli, it also impacts on infection control (Integrated Publishing, 2010).

II. OBJECTIVES

Study aims to assess teachers' knowledge level needs concerning cholera infection, and then to design a health education program for them to improve their knowledge towards cholera infection control, to identify the relationship between teachers' knowledge and their demographic characteristics of age, gender, educational level, and experience years, and to determine the effectiveness of the health education program on them.

III. METHODOLOGY

The study is conducted at (6) education directorates in Baghdad City, (3) in Al Rassafa sector, and (3) in Al Karkh sector. The study included twenty four secondary schools, (12) in Al Rassafa sector, and (12) in Al Karkh sector, from October 20th 2015 to June 5th 2016, to assess teachers' knowledge about cholera infection control in the secondary schools in Baghdad City. A cluster sample of (60) teachers (males and females) were selected. An educational program has been constructed and applied with an approach of pre-test and post-test for the study and control groups. A questioner format was used for data collection. The validity of questioner was estimated through a penal of experts related to the field of study, and its reliability was estimated through a pilot study was carried out on 21th February up to the 25th February 2016 and it was conducted on (10) teachers who were selected purposively from the secondary schools in Al- Karkh sector   in Baghdad City. A questionnaire format was used for data collection which consisted of (2) major parts; the first part is concerned with teachers' socio-demographic characteristics of sex, age, gender, marital status, level of education, years of experience in teaching, and sources of information . The second part is concerned with teachers' knowledge towards cholera infection control which consisted of (54) items, includes teachers' knowledge about the cholera infection (22) items, teachers' knowledge towards prevention and control cholera infection (16) items, teachers' knowledge about the health education (10) items, and teachers' knowledge about health environment (6) items.

The content validity is estimated through a panel study of experts. The reliability of study instrument was determined by using test – retest technique. Pearson correlation coefficient (r) was = 0.86 for teachers' knowledge. Analysis of data was performed through the application of descriptive statistics (frequency, percentage) and inferential statistics (mean of scores, relative sufficiency, Pearson correlation coefficient, t-test and one way analysis of variance and chi- square test). The items of science teachers' awareness were rated on three level likert scales; know, uncertain, and do not know, and scored as 3, 2 and 1, respectively (Polit and Hungler, 2000).The researcher interviewed all teachers, and each one was given a time period between (15–20) minutes to answer the questions.

IV.   RESULTS

Table (1): Distribution of teachers by their demographic characteristics (N= 30) in the study and control groups.

List	Demographic characteristics	Study group(N= 30)		Control group(N= 30)	
		F.	%	**F.**	%
1	**Gender**				
	Male	10	33.33	10	33.33
	Female	20	66.67	20	66.67
	Total	**30**	**100.00**	**30**	**100.00**
2	**Age (year)**				
	20 – 29	6	20.0	8	26.67
	30 – 39	9	30.0	12	40.0
	40 – 49	10	33.33	7	23.33
	50 - and more	5	16.67	3	10.0
	Total	**30**	**100.0**	**30**	**100.0**
3	**Marital status**				
	Single	6	20.0	3	10.0
	Married	18	60.0	20	66.66
	Divorced	3	10.0	2	6.67
	Widowed	2	6.67	3	10.0
	Separated	1	3.33	2	6.67
	Total	**30**	**100.0**	**30**	**100.0**
4	**Educational level**				
	College graduate	25	83.33	28	93.33
	Master	5	16.67	2	6.67
	Total	**30**	**100.00**	**30**	**100.0**
5	**Sector**				
	Al-Rassafa	15	50.0	15	50.0
	Al-Karkh	15	50.0	15	50.0
	Total	**30**	**100.0**	**30**	**100.0**
6	**Years of employee**				
	Less than 1 – 5	5	16.67	4	13.33
	6 – 10	7	23.33	5	16.67

	11 – 15	10	33.33	7	23.33
	16 – 20	3	10.0	8	26.67
	21 - and more	5	16.67	6	20.0
	Total	**30**	**100.0**	**30**	**100.0**
7	**Information sources**				
	Internet	14	46.67	18	60.0
	TV	5	16.67	4	13.33
	Books and magazine	10	33.33	5	16.67
	Training of courses	1	3.33	3	10.0
	Total	**30**	**100.0**	**30**	**100.0**

Table (1): Shows that (66.67%) of teachers in study and control groups are female. Their ages constitute (33.33%) in the study groups, ranging between (40 – 49) years old and (40.0%) in control groups, ranging between (30 – 39) years old. As for the marital status, the majority of teachers are married (60.0%); (66.66%) in the study and control groups respectively. Concerning their educational level, the majority of teachers are college graduates in the study and control groups. Regarding the years of employment in teaching, most of the teachers have years' experience ranging between (11 – 15) years (33.33%) and between (16 – 20) years (26.67%) in control groups. Regarding information sources (46.67%); (60.0%) respectively in the study and control groups obtain from Internet.

Table (2): Total assessment of teachers' knowledge in the (Pre – post) tests for study and control groups

Items = 54		Study group n = 30								Control group n = 30							
		Pre – test				Post – test				Pre – test							
		Know	Uncer tain	Don't know	M.S	Know	Uncer tain	Don't know	M.S	Know	Uncer tain	Don't Know	M.S	Know	Uncer Tain	Don't Know	M.S
1	**Teachers' knowledge towards cholera infection (22) items.**	197	61	402	1.86	440	60	160	2.42	189	53	418	1.65	196	52	412	1.67
2	**Teachers' knowledge towards prevention and control (16) items.**	150	48	282	1.72	300	50	130	2.35	170	50	260	1.81	175	45	260	1.82
3	**Teachers' knowledge towards health education (10) items.**	141	30	129	2.04	205	20	75	2.43	140	35	125	2.05	143	41	116	2.09
4	**Teachers' knowledge towards environmental health (6) items.**	170	3	7	2.90	175	0	5	2.94	169	8	3	2.92	172	5	3	2.93
Total		658	142	820	**1.90**	1120	130	370	**2.46**	668	146	806	**1.91**	686	143	791	**1.93**

MS = Mean of Score, Low = Less than (**1.66**), **Moderate =** (**1.66 – 2.33**), **High =** More than (**2.33**)

Table (2) Demonstrates the total mean of scores for teachers' knowledge which indicates that there is high level knowledge (2.46) for teachers after implementing the educational program in the study group while no change is found concerning teachers' knowledge in the control group in the pre and post tests with respect to the total mean of scores.

Table (3): Mean of scores and relative sufficiency for teacher's knowledge towards cholera infection control

List	Grand mean of scores for teachers' knowledge related to items	Study group n = 30						Control group n = 30					
		Pre – test			Post – test			Pre – test			Post – test		
		Mean	RS%	C.S Pre.	Mean	RS%	C.S Post.	Mean	RS%	C.S Pre.	Mean	RS%	C.S Post.
1	Teachers' knowledge towards cholera infection (22) items.	1.86	62.0	L.S	2.42	80.66	H.S	1.65	55.0	L.S	1.67	55.66	L.S
2	Teachers' knowledge towards prevention and control (16) item	1.72	57.33	L.S	2.35	78.33	H.S	1.81	60.33	L.S	1.82	60.66	L.S
3	Teachers' knowledge towards health education (10) items.	2.04	68.0	M.S	2.43	81.0	H.S	2.05	68.33	M.S	2.09	69.66	M.S
4	Teachers' knowledge towards environmental health (6) items.	2.90	96.66	H.S	2.94	98.0	H.S	2.92	97.33	H.S	2.93	97.66	H.S
	Total	1.90	63.33	L.S	2.46	82.0	H.S	1.91	63.66	L.S	1.93	64.33	L.S

MS = Mean of Score, Low = Less than (**1.66**), **Moderate =** (**1.66 – 2.33**), **High =** More than (**2.33**). **L.S**= Low Significant, **M.S**= Moderate Significant, **H.S**= High Significant, **R.S**= Relative Sufficiency.**MS = Mean of Score, Low =** Less than (**66.66**), **Moderate =** (**66.66 – 77.77**), **High =** More than (**77.77**).

    Table (3) demonstrates the total mean of scores for teachers' knowledge which indicates that there is high level knowledge (2.46) good, for teachers after implementing the educational program in the study group while no change is found concerning teachers' knowledge in the control group in the pre and post tests with respect to the total mean of scores and the relative sufficincy (RS).

Table (4): Comparison between teachers' knowledge and their age in the study and control groups

Teachers' knowledge		Study group n = 30								Control group n = 30							
		Pre – test				Post – test				Pre – test				Post – test			
Age		Know	Uncer Tain	Don't Know	Total	Know	Uncer tain	Don't know	Total	Know	Uncer tain	Don't Know	Total	Know	Uncer tain	Don't Know	Total
29 - 20	Count	129	30	170	329	229	30	70	329	190	39	220	449	200	38	24	449
39 - 30	Count	194	40	225	459	324	35	100	459	235	51	285	571	241	50	280	571
40 - 49	Count	218	46	283	547	345	42	160	547	133	31	175	339	130	30	179	339
50 - and more	Count	117	26	142	285	222	23	40	285	110	25	126	261	115	25	121	261
Total	Count	658	142	820	1620	1120	130	370	1620	668	146	806	1620	686	143	791	1620
Chi-square Obs.		1.203				26.97				1.07				3.95			
Df		6				6				6				6			

P. Value	0.97	0.000	0.98	0.68
Ass.	N.S	S	N.S	N.S

Table(4) indicates that there is a statistical significant association that can be manifested between teachers' knowledge and their age in the study group after the implementation of the health educational program, while there are no statistical significant differences in the pre and post tests for the control groups.

Table (5): Comparison between teachers' knowledge and their gender in the study and control groups

Teachers' knowledge		Study group n = 30								Control group n = 30							
		Pre – test				Post – test				Pre – test				Post – test			
Gender		Know	Uncer tain	Don't Know	Total	Know	Uncer tain	Don't know	Total	Know	Uncer tain	Don't Know	Total	Know	Uncer tain	Don't Know	Total
Male	Count	225	47	270	542	370	45	170	585	230	50	266	546	240	48	255	543
Female	Count	433	95	550	1078	750	85	200	1035	438	96	540	1074	446	95	536	1077
Total	Count	658	142	820	1620	1120	130	370	1620	668	146	806	1620	686	143	791	1620
Chi-square Obs.		0.272				20.23				0.335				1.245			
Df		2				2				2				2			
P. Value		0.87				0.000				0.83				0.53			
Ass.		N.S				S				N.S				N.S			

Table(5) indicates that there is a statistical significant association that can be manifested between teachers' knowledge and their gender in the study group after the implementation of the health educational program, while there are no statistical significant differences in the pre and post tests for the control groups.

Table (6): Comparison between teachers' knowledge and their level of education in the study and control groups

Teachers' knowledge		Study group n = 30								Control group n = 30							
		Pre – test				Post – test				Pre – test				Post – test			
Level of education		Know	Uncer Tain	Don't Know	Total	Know	Uncer tain	Don't know	Total	Know	Uncer Tain	Don't Know	Total	Know	Uncer Tain	Don't Know	Total
College graduate	Count	550	120	680	1350	1000	100	200	1300	628	136	753	1517	640	134	740	1514
Master	Count	108	22	140	270	120	30	170	320	41	10	53	103	46	9	51	106
Total	Count	658	142	820	1620	1120	130	370	1620	668	146	806	1620	686	143	791	1620
Chi-square Obs.		0.269				21.77				0.277				0.056			
Df		2				2				2				2			

P. Value	0.87	0.000	0.88	0.97
Ass.	N.S	S	N.S	N.S

Table(6) indicates that there is a statistical significant association that can be manifested between teachers' knowledge and their levelof education in the study group after the implementation of the health educational program, while there are no statistical significant differences in the pre and post tests for the control groups.

Table (7): Comparison between teachers' knowledge and their Years of employment in the study and control groups

Teachers' knowledge		Study group n = 30								Control group n = 30							
		Pre – test				Post – test				Pre – test				Post – test			
Years of employment		Know	Uncer tain	Don't Know	Total	Know	Uncer Tain	Don't know	Total	Know	Uncer Tain	Don't Know	Total	Know	Uncer tain	Don't Know	Total
Less than 1 – 5	Count	116	26	130	272	190	20	62	272	105	22	110	237	110	22	105	237
6 – 10	Count	142	32	197	371	251	30	90	371	115	24	135	274	120	24	130	274
11 – 15	Count	218	45	283	546	404	46	96	546	140	31	180	351	143	29	179	351
16 – 20	Count	66	13	80	159	85	14	60	159	180	40	226	446	180	39	227	446
21- and more	Count	116	26	130	272	190	20	62	271	128	29	155	312	133	29	150	312
Total	Count	658	142	820	1620	1120	130	370	1620	668	146	806	1620	686	143	791	1620
Chi-square Obs.		3.25				30.59				1.86				3.82			
Df		8				8				8				8			
P. Value		0.91				0.000				0.98				0.87			
Ass.		N.S				S				N.S				N.S			

Table(7) indicates that there is a statistical significant association that can be manifested between teachers' knowledge and their years of experience in the study group after the implementation of the health educational program, while there are no statistical significant differences in the pre and post tests for the control groups.

Table (8): Comparison between teachers' knowledge and their information sources in the study and control groups

Teachers' knowledge		Study group n = 30								Control group n = 30							
		Pre – test				Post – test				Pre – test				Post – test			
Information sources		Know	Uncer tain	Don't know	Total	Know	Uncer Tain	Don't know	Total	Know	Uncer Tain	Don't Know	Total	Know	Uncer tain	Don't Know	Total
Internet	Count	300	64	355	719	500	60	159	719	393	82	455	930	391	81	458	930
TV	Count	117	26	142	285	174	25	86	285	105	21	115	241	115	20	106	241
Book and	Count	220	46	283	549	409	40	100	549	115	27	140	282	120	26	136	282

Magazine																
Training courses	Count	21	6	40	67	37	5	25	67	55	16	96	167	60	16	91	167
Total	Count	658	142	820	1620	1120	130	370	1620	668	146	806	1620	686	143	791	1620
Chi-square Obs.		3.28				25.72				5.91				5.84			
Df		6				6				6				6			
P. Value		0.77				0.000				0.43				0.44			
Ass.		N.S				S				N.S				N.S			

Table(8) indicates that there is a statistical significant association that can be manifested between teachers' knowledge and their information sources in the study group after the implementation of the health educational program, while there are no statistical significant differences in the pre and post tests for the control groups.

V.   DISCUSSION

1. Discussion of demographic characteristics of study sample for teachers' knowledge.

Throughout the course of the present study, and as it has been shown in table (1) that that (66.67%) of teachers in study and control groups are female. Their ages constitute (33.33%) in the study groups, ranging between (40 – 49) years old and (40.0%) in control groups, ranging between (30 – 39) years old. As for the marital status, the majority of teachers are married (60.0%); (66.66%) in the study and control groups respectively. Concerning their educational level, the majority of teachers are college graduates in the study and control groups. Regarding the years of employment in teaching, most of the teachers have years' experience ranging between (11 – 15) years (33.33%) and between (16 – 20) years (26.67%) in control groups. Regarding information sources (46.67%); (60.0%) respectively in the study and control groups obtain from Internet.This result is supported by Raad, K. (2014).

2. Discussion of the teacher's knowledge towards cholera infection control

Table (2 and 3) demonstrates the total mean of scores for teachers' knowledge which indicates that there is high level knowledge (2.46) good, for teachers after implementing the educational program in the study group while no change is found concerning teachers' knowledge in the control group in the pre and post tests with respect to the total mean of scores and the relative sufficincy (RS).This result is supported by Karcher,M (2008) they indicate that teachers' knowledge was poor before implementation an educational program for teachers in secondary school.

3. Discussion Comparison between teachers' knowledge and their demographic characteristics in the study and control groups

Table (4, 5, 6, 7 and 8) indicates that there is a statistical significant association that can be manifested between teachers' knowledge and their demographic characteristics in the study group after the implementation of the health educational program, while there are no statistical significant differences in the pre and post tests for the control groups.This result is supported by Raad, K. (2014) and Mohammad, B. (2009).

Conclusion: The study concluded that teachers' knowledge towards cholera infection control in Baghdad secondary schools was poor.

Recommendations: The study recommends that there is a need for cooperation between the Ministry of Health and the Ministry of Education on writing a book systematically for secondary schools about the nature of the transitional diseases and how to control. Emphasis on continuous sessions concerning cholera infection control for teachers in all secondary schools in Baghdad City. Increasing health awareness about cholera infection throughout multiple media facilities, such as radio, television, and magazines. Awareness programs related to water treatment, water quality and importance of flushing toilets should be carried out in the rural areas to improve the status of the public health.

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