

# Effectiveness of an Education Program on Knowledge of Primary School Teachers toward Mumps Disease

Haqi I. Mansoor<sup>1</sup>, Kahtan H. Hussein<sup>2</sup>

<sup>1</sup>Assistant Lecturer, College of Nursing/ University of Kerbala, Iraq, <sup>2</sup>Prof. Dr., College of Nursing/ University of Babylon, Iraq

## Abstract

This study aims to determine the effectiveness of an education program on primary school teachers' knowledge toward mumps disease and to identify the relationship between the primary school teachers' knowledge and some demographic variables. Quantitative research a quasi-experimental design (pre-post tests) has been used in the present study for the period of January 2018 to the end of June 2019. A nonprobability (purposive sample) sample of 60 teachers has been selected from 30 primary schools in Holy Kerbala City. The sample of the study was divided into two groups: (30) teachers for the study group, who have been exposed to the education program, and (30) teachers for the control group, who not exposed to the education program. The groups are almost matched relative to their characteristics. The questionnaire was submitted to the teachers for the pre-test before the implementation of the program. Post-test I was conducted immediately after that. Post-test II was conducted two months later. The findings of the data analysis indicate that the teachers' knowledge among the study group improves as a result of the implementation of the education program. Among the control group, there is no significant difference in the level of teachers' knowledge. The study recommends the cooperation between the Ministry of Education with the Ministry of Health to develop a national plan regarding mumps and other communicable diseases to raise the awareness of the school community (students, teaching, and non-teaching staff, and parents) regarding this diseases.

**Keywords:** Effectiveness, Primary School Teachers, Knowledge, Mumps

## Introduction

Mumps is an acute disease of children and young adults, caused by a paramyxovirus of which there is only a single serotype. Mumps virus infection produces no symptoms in about one-third of infected persons<sup>1</sup>. The hallmark of infection is swelling of the parotid gland. Aseptic meningitis and encephalitis are common complications of mumps together with orchitis and oophoritis, which can arise in adult men and women, respectively; other complications include deafness and pancreatitis. Clinical diagnosis can be based on the classic parotid swelling; however, this feature is not present in all cases of mumps and can also occur in various other disorders<sup>2</sup>.

The points of arguments related to this research topic that mumps virus is a highly infectious pathological agent, despite the use of vaccination, outbreaks continue to occur worldwide and affect all age groups. There is no specific treatment for mumps. Someone may ask what is

the need for this research and what is important for the community? This contagious disease is widely distributed in low- and medium-income countries like Iraq, mumps is an insignificant and neglected public health problem because of poor documentation of clinical cases and lack of published epidemiologic studies. By the end of 2015 around 12957 mumps cases were reported in Iraq, the numbers of incident cases increased dramatically in the year 2016 (73919 case) this was unexpectedly very high as compared with numbers in neighboring countries in the same period as documented by WHO update report; Saudi Arabia 14, Syrian Arab Republic 84, Jordan 168, Kuwait 318, and 344 in Turkey<sup>3</sup>.

## Methodology

Quantitative research a quasi-experimental design (pre-post tests) has been used in the present study for the period of January 2018 to the end of June 2019. A nonprobability (purposive sample) sample of 60 teachers has been selected from 30 primary schools in

Holy Kerbala City. The sample of the study was divided into two groups: (30) teachers for the study group, who have been exposed to the education program, and (30) teachers for the control group, who not exposed to the education program. The groups are almost matched relative to their characteristics. The education program for teachers has been constructed according to the results of the assessment of the teacher's needs to knowledge about mumps and from review the related literature. The questionnaire involved two-part: the first, demographic data of teachers such as age, gender, and specialization, level of education, years of employment, participation in training course or workshop toward communicable diseases and second part, concerning teachers' knowledge about mumps in primary schools were comprised of (36) items divided to (6) items related to knowledge about anatomy and physiological of salivary glands, general knowledge about mumps (5) items, knowledge about signs and symptoms of mumps disease (7) items, knowledge about diagnosis and complications of mumps disease (6) items, knowledge about mode of transmission for mumps infection (6) items, knowledge about prevention and treatment of mumps disease. The content validity has been determined through the panel of 17 experts their specialties fields are nursing and medicine. The reliability of the questionnaire is determined through the use of pre-posttest technique and computing of correlation coefficients ( $r=0.93$ ). The questionnaire was submitted to the teachers for the pre-test before the implementation of the program. Post-test I was conducted immediately after that. Post-test II was conducted two months late. the data of the study were analyzed through the use of Statistical Package for Social Science Program (IBM SPSS) version 24 24 through a statistical approach that includes (frequency, percentage, Mean of score (M.S.) and standard deviation (SD) and an Inferential statistical approach that includes (ANOVA and t-test). Results were determined as significant at ( $P<0.05$ ).

## Results and Discussion

### The demographic characteristics of sample:

The majority of teachers among study group are with age (28-43) years old 50% in study group while 40 % in control group from same age groups. This result is consistent with Ahmed and Hameed, (2013) who revealed that the majority of the studied teachers at age 25-44 years<sup>4</sup>. However, it relatively close from Thumil and Bahlol, (2016) who revealed that more than

half of the studied teachers at age 20-49 years old<sup>5</sup>. The findings reveal that more of teachers are females among the study and control group with a percentage of (73.3%) this result agrees with Ganpatrao's study in 2014 that indicate about (73%) of teachers were females in the sample of the study<sup>6</sup>. Regarding the variable of specialty, more of teachers are specialized with sciences among the study group (70%) and control group (73.3%). This result coincides with the findings of Faraj and Khalifa (2014) who has been selected the same specialty (teachers of sciences) for study<sup>7</sup>. The level of education refers to diploma among teachers of both groups; the study group (70%) and control group (73.3%) while (30% and 26.3 %) of them in sequentially for the study and control groups with bachelor's degree. These findings getting close to Hussein (2018) when study academic achievement showed that (60%) of teachers in the study group were graduates of teachers' preparation institute while more than half of them in the control group were graduates of colleges (56.7%)<sup>8</sup>. Regarding years of employment, the highest percentage among the study group reveal (11-18) years (33.3%), while the same percentage among control group that reveals (27-34) years. This result agrees with Ail, 2018 in the study group but disagrees in control group, (50%) of teachers in the study group have work experience of (11-13) years and (26.8%) of teachers in control group who have (4-6) years of employment. When calculating the total number of for training courses from 60 teachers the results indicate (28.3 %) from them were participated in training courses related to communicable diseases (only 8.3% among the study group and 20 % among the control group). This result agrees with Khalifa and Faraj (2010) about (28) of the sample have participated in training courses<sup>9</sup>.

### The effectiveness of an education program about teacher' knowledge concerning mumps diseases:

Determination the effectiveness of the education program has been employed through the comparison between the levels of teachers' knowledge before and after their participation in the education program by the findings of pre-test and post-test 1 and through the comparison between the levels of teachers' knowledge after period of time from post-test1 by the findings of post-test 1 and post-test 2. The findings of the data analysis indicate that the teachers' knowledge among the study group improves as a result of the implementation of the education program. Among the control group, there is no significant difference in the level of teachers' knowledge

(Table 1, Figure 1). This result agrees with the study of Hussein in 2018 has been showed that the effectiveness of educational program on teachers' knowledge about early detection of communicable diseases; the program is highly effective as shown by high significant differences among teachers' knowledge in post-test 1 and post-test 2 in the study group whereas no significant differences have been seen among periods of control group which means that the program is effective on teachers' knowledge<sup>8</sup>. Which supported through Al- Jourani 's (2014) study indicates the successful implementation of an educational program to improve teacher's knowledge concerning communicable diseases. He said that "There were significant statistical differences in teacher knowledge, practices, and attitudes after implementation of the communicable diseases control educational program compared with their knowledge, practices, and attitudes in the period before the implementation of the program"<sup>10</sup>.

**Th relationship between teachers' knowledge and their demographic variables:** The demographic variables are attributes of subjects that are collected to

describe the sample<sup>11</sup>, in this study some demographic variables regarded teachers at primary schools are selected included age, gender, specialty, level of education, years of employment, participation in the training course, and course's duration. During the following paragraphs will discuss the relationship between these demographic variables with the items of study which included anatomy and physiology of the salivary glands, general knowledge about mumps, signs and symptoms of mumps, diagnosis and complication of mumps, mode of mumps transmission, prevention and treatment of mumps and overall knowledge. Concerning the relationship between teachers' knowledge about mumps disease and their demographic variables, the study in table (2) confirms that no significant association between teachers' knowledge improvement effect result after application of the program. while there was a significant association between the prevention and treatment of mumps with their level of education, also between the symptoms, signs, diagnosis, and complication of mumps with their participation in training courses and duration of training courses, %: Percentage

**Table 1: Effectiveness of Education Program on Teachers' Knowledge at Primary School about Mumps**

Knowledge Group		Sources of Variance	Sum of Square	df	Mean Square	F	P ≤ 0.05
Study Group	Post-test I	Between Group Within Group Total	112.367 66.300 178.667	18 11 29	26.243 6.027	71.036	.002
	Post-test II	Between Group Within Group Total	1876.333 284.467 2160.800	18 11 29	104.241 25.861	4.031	.011
Control Group	Post-test I	Between Group Within Group Total	2122.050 945.417 3067.467	17 12 29	124.826 78.785	1.584	.211
	Post-test II	Between Group Within Group Total	963.533 451.833 1415.367	17 12 29	56.678 37.653	1.505	.238

df: Degree of freedom, F: F-Statistic, P: Probability value

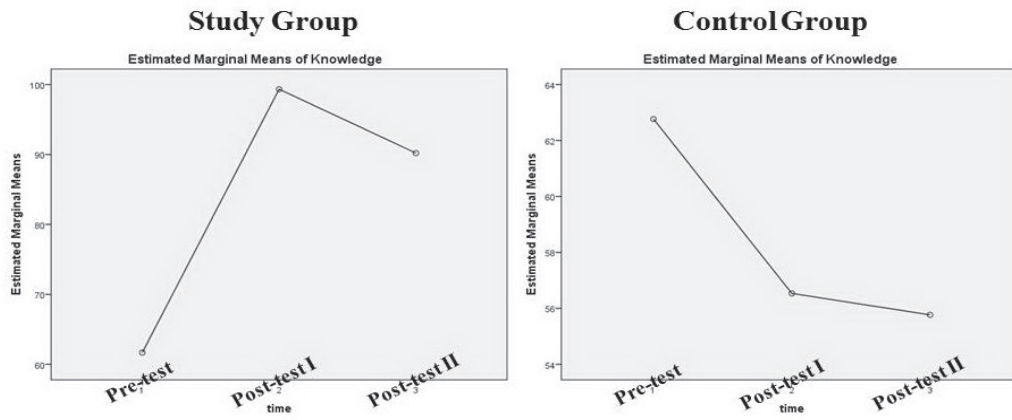


Figure 1: Effectiveness of Education Program on Level of Teachers’ Knowledge at Primary School about Mumps

Table 2: Summary Statistics of Significant Relationship between Teachers’ Knowledge about Mumps and their Demographic Variables

Demographic variables	Study Group (N=30) / Significance P ≤ 0.05						Control Group (N=30) / Significance P ≤ 0.05					
	Age	Gender	Specialty	Level of Education:	Years of employment	Participation in training course	Age	Gender	Specialty	Level of Education:	Years of employment	Participation in training course
Anatomy & physiology	.114 (N.S)	.600 (N.S)	.880 (N.S)	.544 (N.S)	.095 (N.S)	.064 (N.S)	.798 (N.S)	.146 (N.S)	.053 (N.S)	.451 (N.S)	.652 (N.S)	.541 (N.S)
General knowledge about mumps	.309 (N.S)	.898 (N.S)	.697 (N.S)	.826 (N.S)	.137 (N.S)	.509 (N.S)	.616 (N.S)	.090 (N.S)	.704 (N.S)	.206 (N.S)	.780 (N.S)	.606 (N.S)
Symptoms & signs of mumps	.588 (N.S)	.724 (N.S)	.417 (N.S)	.865 (N.S)	.809 (N.S)	.029 (S)	.052 (N.S)	.307 (N.S)	.580 (N.S)	.307 (N.S)	.128 (N.S)	.177 (N.S)
Diagnosis & complication of mumps	.638 (N.S)	.278 (N.S)	.319 (N.S)	.319 (N.S)	.655 (N.S)	.028 (S)	.788 (N.S)	.470 (N.S)	.309 (N.S)	.105 (N.S)	.322 (N.S)	.111 (N.S)
Mode of mumps transmission	.771 (N.S)	.212 (N.S)	.755 (N.S)	.586 (N.S)	.141 (N.S)	.378 (N.S)	.241 (N.S)	.439 (N.S)	.898 (N.S)	.520 (N.S)	.942 (N.S)	.196 (N.S)
Prevention & treatment of mumps	.745 (N.S)	.073 (N.S)	.697 (N.S)	.042 (S)	.631 (N.S)	.808 (N.S)	.218 (N.S)	.950 (N.S)	.925 (N.S)	.827 (N.S)	.751 (N.S)	.427 (N.S)
Overall knowledge	.611 (N.S)	.132 (N.S)	1.000 (N.S)	.280 (N.S)	.977 (N.S)	.287 (N.S)	.302 (N.S)	.861 (N.S)	.543 (N.S)	.650 (N.S)	.846 (N.S)	.056 (N.S)

P: Probability value, S: Significance, N.S: Not Significance, H.S: High significant

### Conclusion

Generally, the pre-test evaluation of teachers' knowledge relating to mumps disease at the primary schools, indicates a poor level of overall knowledge but there are significant improvements in teachers' knowledge about mumps disease after the implementation of the education program. The study recommends the cooperation between the Ministry of Education with the Ministry of Health to develop a national plan regarding mumps and other communicable diseases to raise the awareness of the school community (students, teaching, and non-teaching staff, and parents) regarding this disease.

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**Conflict of Interest:** None to declare.

**Ethical Clearance:** All experimental protocols were approved under the Faculty of Nursing, University of Baghdad. Iraq and all experiments were carried out in accordance with approved guidelines.

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