



Impact of A Training Program on Knowledge and Practice on Asthma in Children for School Health Teachers at Governmental Schools in Gaza Strip, Palestine

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Abstract

The study aimed to assess the effectiveness of a training program on improving knowledge and practices about Asthma among school health teachers at governmental schools in Gaza Strip, Palestine. The study utilized Quazi experimental design, the sample of the study consisted of (44) school health teachers from governmental schools. Data collection was in two stages: before implementation of the training program (pre-test) and at 3-months after the training program (post-test). The study reached that 24 (54.5%) of participants were males and 20 (45.5%) were female teachers, 37 (84.1%) have bachelor degree, 16 (36.4%) have an experience of 10 years and more as school health teachers. Knowledge score about Asthma was 72.51% at pre-test, increased to 85.11% at post-test, and Practice score about Asthma was 74.98% at pre-test, increased to 93.56% at post-test. There were statistical significant increase in knowledge and practice score after implementation of the training program (post-test) compared to scores before the program (pre-test). The change percent in knowledge score about Asthma 7.33, and the change percent in practice score was 10.57. There were statistical no significant differences in knowledge and practice scores related to gender and academic degree, but participants who worked as school health teachers for 10 years, and more exhibited significant higher score in knowledge about Asthma ($P= 0.021$) at pre-test, but there were no significant differences at post-test. The study recommended adopting for planned and scheduled educational programs to improve competency of school health teachers and providing health services to school children.

Keywords: School Health Teachers, Knowledge, Practice, Asthma, Gaza Strip, Palestine.

Introduction

Over the past decades, the prevalence of chronic health conditions of children has increased over time (DiPiro et al, 2019). The special needs of school children with Asthma are complex and continuous. The school health teacher has a pivotal role in understanding students' health status, providing individualized health needs, and coordination with the Directorate of School Health at Ministry of Health (Leroy et al., 2017; McClanahan & Weismuller, 2015). Children with Asthma are at risk for high absenteeism rates, low student engagement, dropping-out of school, and below-average performance on standardized achievement tests (Bethell et al., 2012). The school health teacher provides support the school children, and to the community, by coordinating intervention and evaluation services, identifying unrecognized symptoms and student responses, and referring students to the appropriate resources (Centers for Diseases Control and Prevention - CDC, 2017). By assisting students with the management of their disease, the school health teacher contributes to risk reduction, increased classroom seat time, decreased student absenteeism, improved academic success, and cost savings to families and educational and health care systems (HCS) (Forbes, 2014; Michael et al., 2015). Children with Asthma, need extra attention at school to stay safe and healthy. With the right treatment plan and support, children with Asthma can attend the school without



putting their health at risk. Moreover, school health teacher can work to maintain the health of students who have Asthma at the best possible level, and decrease the unnecessary use of emergency rooms of hospitals (Wang et al., 2014). School health services play a key role in managing the daily needs of students with Asthma. The school health teacher is often responsible for planning and implementing healthcare plans for safe and effective management of Asthma, often for those who may have limited access to health care facilities, and they can act to promote a healthy and safe school environment (Association for Supervision and Curriculum Development [ASCD] & CDC, 2014). In order to be able to provide the needed health services, school health teachers need to be qualified with adequate skills in caring of children with Asthma, and this can be achieved by attending education and training programs (Abdeljawad and AlZatma, 2019).

Study problem

School health services include educational programs, screening, and referral of sick school children who need further medical treatment. According to records of Directorate of School Health (DSH), health care providers and school health teachers detected many health problems through screening; about 8% of students were discovered as having different health problems such as undescended testis, heart problems, underweight, overweight, and skin disease, 10% of students were discovered as having ophthalmic problems and vision disturbances, 9.4% of children were discovered as having hearing disturbances, and 13% of students had dental problems (DSH, 2019). In addition, according to official reports from DSH (2019), there are about 413 schoolchildren have Diabetes mellitus, about 300 have epilepsy and seizures, but there are no accurate records of blood disorders and Asthma.

Aim of the study

To assess the effectiveness of a training program on knowledge and practices about Asthma among school health teachers at governmental schools in Gaza Strip, Palestine.

Literature Review

The school health services are important aspect of health delivery systems necessary to monitor the health of school children to keep them healthy and optimize their learning (WHO, 2015). The WHO launched the Global School Health Initiative in 1995 with the goal to improve child, adolescent and community health through health promotion and programming in schools. This initiative is dedicated to promoting development of school health programs and increasing the number of health-promoting schools (WHO, 2018).

Asthma is a common chronic disease that can be serious and imposes a substantial burden on patients, their families, and the community. It causes respiratory symptoms, limitation of activity, and exacerbations that sometimes require urgent health care and may be fatal (Reddel et al., 2015). A number of factors including genetic predisposition, environmental factors, and lifestyle factors including dietary habits influence the development and expression of asthma (Levy et al., 2013). Asthma imposes a considerable burden on health care systems and on society through loss of productivity in the workplace, and it still contributes to many deaths worldwide (Reddel et al., 2015). The goal of asthma treatment is to achieve and maintain clinical control, which can be achieved in most patients with pharmacologic intervention strategy. However, asthma control is still difficult to attain in all patients, and when asthma is uncontrolled, it has dire consequences for health and well-being (Lee et al., 2018). Globally, asthma affects approximately 300 million people, and this number is



expected to reach 400 million by 2050 (Lv et al., 2014). In Palestine, the prevalence rate of asthma in children living in villages, cities, and refugee camps were 17.1%, 8.8%, and 9.4%, respectively, with urban area having higher prevalence rate than rural areas (El Bilbeisi et al., 2019). Asthma prevalence varies (1–18% or even more) among different countries and also different regions of the same country due to the diversity in ethnicity race, sex, socioeconomic and environmental conditions, and lifestyle. Industrialized countries and urban areas are among risk factors of the disease, but exposure to infections in early years of life may prevent occurrence of asthma (Alavinezhad&Boskabady, 2018). Schools have been a powerful setting to promote health programs (Pommier et al., 2010). Many school-aged children are affected by treatable and preventable illnesses (Ademokun et al., 2014). School health programs aim to provide support and preventive measures to improve the health of school children. School health programs can cover both the prevention and treatment of disease and malnutrition in a school setting, and these services are designed to promote students' physical, cognitive, and social development (Snilstveit et al 2016).

Materials and Methods

The study used Quazi experimental design. The sample of the study consisted of 44 school health teachers from the governmental schools in Gaza Strip. The study was conducted during the period from July to December 2022. The researcher develop Self-administered questionnaire that has been used at two-stages (pre and post) training program. The questionnaire was designed to measure level of knowledge and practices of school health teachers about Asthma. The researcher examined the face and content validity of the questionnaires by distributing the questionnaire to experts in research methodology.

Stages of study: The study consisted of three stages:

- a) The first stage is pre-intervention stage: Assessment and preparation of the training program and the questionnaire.
- b) The second stage is intervention stage: Implementation of training program about Asthma.
- c) The third stage is post intervention stage: Evaluation for the the effectiveness of the implemented training program (measured by changes in level of knowledge and practice).

Analysis of data collected through pretest showed low to moderate level of knowledge and practice in some items. Accordingly, a training program was designed and implemented to equip the school health teachers with essential knowledge and practice regarding Asthma.

All the participants were attended the sessions and participated actively in practical sessions about respiratory assessment and the use of nebulizers. The training team included experts in teaching and training. Three-day training (theoretical and simulation practice) provided the information needed to perform the needed care for the children who have asthmatic attack. The school health teachers had been divided into two groups (22 in each group) to make the training more effective. The training program was conducted in July 2022 (3 days for each group).

Post-intervention stage (post-test): This stage included two activities:

Filling the questionnaires with school health teachers to evaluate the effectiveness of the training program. All the teachers were observed by the researcher for selected skills (checking blood pressure, checking pulse, using of the nebulizer).

Data collection: The researcher collected data two times:

Pre-test: The study participants filled the questionnaire initially before implementation of the training program.

Post-test: The participants filled the questionnaire after the memory gap (3 months period). The researcher made sure that matching of pre-test and post-test was ensured to obtain accurate results.

Results

Characteristics of study participants

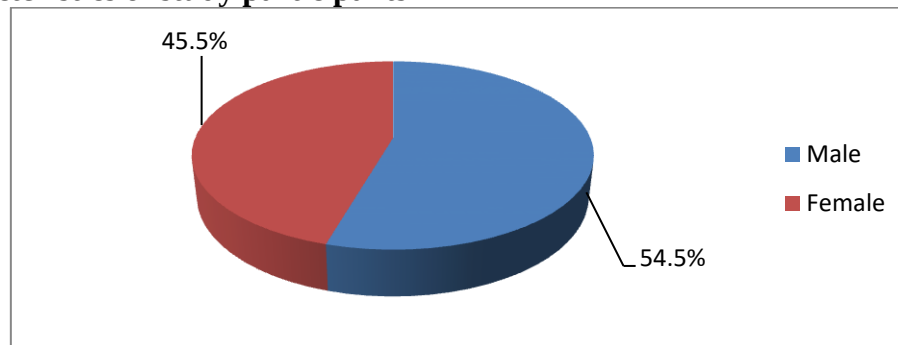


Figure (1): Distribution of study participants by gender

Figure (1) showed that 24 (54.5%) of study participants were male teachers and 20 (45.5%) were female teachers.

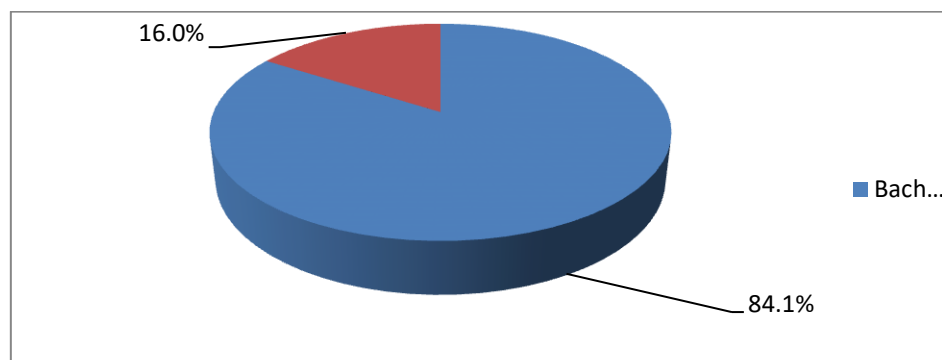


Figure (2): Distribution of study participants by academic degree

Figure (2) showed that 37 (84.1%) of study participants have bachelor degree and 7 (15.9%) have master or doctoral degree.

Table (1): Sociodemographic characteristics of study participants

Variable	Frequency	Percent (%)
Total years of experience		
≤ 15 years	19	43.2
≥ 16 years	25	56.8
Total	44	100.0
Mean = 15.95±4.565 years		
Experience as a school health teacher		
≤ 10 years	28	63.6
≥ 11 years	16	36.4
Total	44	100.0
Mean = 7.30±5.518 years		

Table (1) showed that 19 (43.2%) of study participants have an experience of 15 years and less as teachers, while 25 (56.8%) have an experience of 16 – 32 years ($m = 15.95 \pm 4.56$ years). Regarding experience as a school health teacher, 28 (63.6%) of study participants worked as a school health teacher for less than 10 years, while 16



(36.4%) worked as school health teachers for 10 years and more ($m = 7.30 \pm 5.51$ years).

Table (2) Knowledge about Asthma (Pre and post-test)

No.	Items of Knowledge about Asthma	Pre- test n(%)		Post-test n(%)	
		Correct	Wrong	Correct	Wrong
1	Asthma is a chronic recurrent disease of airway inflammation due to repeated exposure of the child to irritants leading to an excessive immune response.	42 (95.5)	2 (4.5)	44 (100.0)	0
2	Asthma leads to narrowing of airway.	43 (97.7)	1 (2.3)	40 (90.9)	4 (9.1)
3	Chronic Asthma leads to mucous secretions.	24 (54.5)	20 (45.5)	36 (81.8)	8 (18.2)
4	Causes of an asthma attack in children with asthma excessive immune response to the vaccine plants	34 (77.3)	10 (22.7)	40 (90.9)	4 (9.1)
5	Causes of an asthma attack in children with asthma are an excessive immune response to perfume / strong odors.	38 (86.4)	6 (13.6)	43 (97.7)	1 (2.3)
6	Signs and symptoms of asthma in children with asthma such as wheezing caused by airway tightness.	39 (88.6)	5 (11.4)	44 (100.0)	0
7	Signs and symptoms of asthma in children with asthma such as irritability and sneezing.	30 (68.2)	14 (31.8)	41 (93.2)	3 (6.8)
8	There are special medication that can cure children from Asthma	13 (29.5)	31 (70.5)	18 (40.9)	26 (59.1)
9	Asthma is treated in children with asthma by avoiding irritants only.	16 (36.4)	28 (63.6)	19 (43.2)	25 (56.8)
10	Drugs that are used to decrease the acuity of symptoms, also decrease the immune response and alleviate the narrowing of airway	40 (90.9)	4 (9.1)	43 (97.7)	1 (2.3)
11	Complications of asthma in children with asthma such as crisis asthmatic attack.	32 (72.7)	12 (27.3)	44 (100.0)	0
Total (%)		72.51	27.49	85.11	14.89

Table (2) showed that there was a considerable improvement in knowledge about Asthma after the education program compared to base line knowledge before the educational program. The overall knowledge was at pre-test 72.51%, increased to 85.11% at post-test.

Table (3) Practices about Asthma (Pre and post-test)

No.	Items of practices about Asthma	Pre- test n(%)		Post-test n(%)	
		Yes	No	Yes	No
1	I give the prescribed medication to children with Asthma (such as nebulizers) when needed.	32 (72.7)	12 (27.3)	37 (84.1)	7 (15.9)
2	I act to provide safe and healthy environment free of irritants, which have negative effects on children with asthma.	37 (84.1)	7 (15.9)	44 (100.0)	0
3	I provide educational programs to increase awareness of children who have Asthma about their disease.	35 (79.5)	9 (20.5)	43 (97.7)	1 (2.3)
4	I provide educational programs to the teachers about care of children who have Asthma.	40 (90.9)	4 (9.1)	42 (95.5)	2 (4.5)
5	I provide educational programs to the families about	28 (63.6)	16 (36.4)	43 (97.7)	1 (2.3)



6	care of children who have Asthma.				
	I prepared a therapeutic plan (protocol) to manage asthmatic attacks for children who have asthma.	26 (59.1)	18 (40.9)	38 (86.4)	6 (13.6)
Total		74.98	25.02	93.56	6.44

Table (3) showed that there was a considerable improvement in practices about asthma after the education program compared to base line practices before the educational program. The overall scores of practice was at pre-test 74.98%, increased to 93.56% at post-test.

Table (4): Effectiveness of the education program on knowledge & practice about Asthma

Variable	Pre-test (n=44)	Post-test (n=44)	Mean Diff. (95% CI) (Pre - Post)	t- (df)	p value	Change %
	Mean±SD	Mean±SD				
Knowledge about Asthma	18.97±1.42	20.36±1.10	-1.38 (-1.94, -0.82)	-4.983 (43)	<0.001*	7.33
Practices about asthma	10.50±1.50	11.61±0.92	-1.11 (-1.58, -0.64)	-4.786 (43)	<0.001*	10.57

Table (4) showed that there were statistically significant differences in mean scores of knowledge about asthma before and after the education program (18.97 vs. 20.36), t value was -4.983 and p value <0.001, and the percent of change of knowledge about Asthma was 7.33%. The results also showed that there were statistically significant differences in mean scores of practices about Asthma before and after the education program (10.50 vs. 11.61), t value was -4.786 and p value <0.001, and the percent of change of practices was 10.57%. This result reflected that the educational program about Asthma was effective in improving the knowledge and practices of the school health teachers.

Table (5): Differences in knowledge and practices about Asthma related to gender

Variable	Gender	N	Mean	SD	t	P value
Knowledge about Asthma (before)	Male	24	19.333	1.274	1.871	0.068
	Female	20	18.550	1.503		
Knowledge about Asthma (after)	Male	24	20.166	1.203	-1.310	0.188
	Female	20	20.600	0.940		
Practices about Asthma (before)	Male	24	10.500	1.693	0.000	1.000
	Female	20	10.500	1.277		
Practices about Asthma (after)	Male	24	11.416	1.176	-1.708	0.099
	Female	20	11.850	0.366		

Table (5) showed that there were statistically no significant differences in knowledge score about Asthma between male and female teachers before (P= 0.068) and after the education program (P= 0.188). In addition, there were statistically no significant differences in practice score about Asthma between male and female teachers before (P= 1.000) and after the education program (P= 1.000).

Table (6): Differences in knowledge and practices about Asthma related to academic degree

Variable	Academic degree	N	Mean	SD	t	P value
Knowledge about Asthma (before)	Ma/PhD	7	19.857	0.899	1.833	0.074
	Bachelor	37	18.810	1.449		
Knowledge about	Ma/PhD	7	20.714	.951	0.917	0.365



Asthma (after)	Bachelor	37	20.297	1.127		
Practices about Asthma (before)	Ma/PhD	7	10.857	1.345	0.682	0.499
Practices about Asthma (after)	Bachelor	37	10.432	1.537		
	Ma/PhD	7	11.000	1.914	-1.988	0.053
	Bachelor	37	11.729	0.560		

Table (6) showed that there were statistically no significant differences in knowledge score about Asthma related to academic degree of teachers before ($P= 0.074$) and after the education program ($P= 0.365$). Also, there were statistically no significant differences in practice score about Asthma before ($P= 0.499$) and after the education program ($P= 0.053$).

Table (7): Differences in knowledge and practices about Asthma related to experience as a school health teacher

Variable	Experience as a school health teacher	N	Mean	SD	t	P value
Knowledge about Asthma (before)	< 10 years	28	18.607	1.547	-2.408	0.021 *
	≥ 10 years	16	19.625	0.885		
Knowledge about Asthma (after)	< 10 years	28	20.428	0.997	0.513	0.611
	≥ 10 years	16	20.250	1.290		
Practices about Asthma (before)	< 10 years	28	10.250	1.430	-1.481	0.146
	≥ 10 years	16	10.937	1.569		
Practices about Asthma (after)	< 10 years	28	11.428	1.103	-2.338	0.026 *
	≥ 10 years	16	11.937	0.250		

Table (7) showed that there were statistically significant differences in knowledge score about Asthma before the program ($P= 0.021$) in favor of school health teachers who have more than 10 years of experience, but there were no significant differences after the education program ($P= 0.611$), which means that the education program improved the knowledge of school health teachers who have less experience. The results also showed that there were statistically no significant differences in practice score about Asthma before the education program ($P= 0.146$) but significant differences existed after the education program ($P= 0.026$) in favor of teachers who have an experience of 10 years and more.

Discussion

In this study, 44 school health teachers attended a training program for three days included theoretical part and simulation. Comparison of the scores obtained from pre-test and post-test indicated that Knowledge about Asthma was 72.51% increased to 85.11%, and practice score about Asthma was 74.98% increased to 93.56%. These results indicated that the school health teachers have overall moderate level of knowledge and practices about Asthma in children before the training program, which revealed moderate level of school health services. This result agreed with the results of Osuorah et al. (2016) which indicated that school health services was suboptimal, and the results of Bani Omar (2013) found that the degree of providing school health services was moderate. Also, the results of Magaji and Agbu, (2020) revealed that the level of implementation of healthful school environment is moderate, and there was low-level of implementation of skill-based health education and low implementation of school health services. The results also indicated significant increase in level of knowledge and practice after implementation of the training program, which revealed that the training program was highly effective in improving the knowledge and skills



about Asthma in children. This result was consistent with the results of Abu Luli (2017) which indicated that the implementation of school health education was high (82.1%). In addition, Salih et al. (2016) evaluated the effectiveness of implementing an educational program in primary schools in Syria, and found that 28.37% of participants reported that the program was good, and 56.74% reported that the program was moderate.

The results of this study indicated that the training program was well planned and well prepared, and implemented successfully, and make significant change and improvement in participants' knowledge and skills. Periodic, planned programs are important to keep the school health teachers knowledgeable and skillful, which will increase their ability to recognize sick children and provide appropriate health service and care to them. There were no significant differences in scores of knowledge and practice in relation to gender and academic degree. School health teachers who have an experience for more than 10 years expressed significant higher knowledge about Asthma, but there were no significant differences in the scores of post-test. This result is logic because school health teachers who have long years of experience in school health services have more knowledge and skills compared to less experienced teachers. In general, the results of this study proved the effectiveness of education and training programs to increase the knowledge and skills of school health teachers, and subsequently improve the quality of school health services. In the light of the results, the researcher recommends the need to implement periodic educational and training programs to expand the knowledge and skills of school health teachers about different types of health problems.

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Appendix (1): Knowledge and Practice about Asthma in children

I. Personal information:

1.	Gender:	☐ Male ☐ Female
2.	Age:	 years
3	Academic degree:	☐ Bachelor ☐ Ma / PhD
4	Experience in teaching:	 years
5	Experience as school health teacher:	 Years

II. This part measures your knowledge and practice about Asthma in children. Please answer the following questions as appropriate

No	Knowledge about Asthma	Answer	
		Yes	No
1	Asthma is a chronic recurrent disease of airway inflammation due to repeated exposure of the child to irritants leading to an excessive immune response.		
2	Asthma leads to narrowing of airway.		
3	Chronic Asthma leads to mucous secretions.		
4	Causes of an asthma attack in children with asthma excessive immune response to the vaccine plants		
5	Causes of an asthma attack in children with asthma are an excessive immune response to perfume / strong odors.		
6	Signs and symptoms of asthma in children with asthma such as wheezing caused by airway tightness.		
7	Signs and symptoms of asthma in children with asthma such as irritability and sneezing.		
8	There are special medication that can cure children from Asthma		
9	Asthma is treated in children with asthma by avoiding irritants only.		
10	Drugs that are used to decrease the acuity of symptoms, also decrease the immune response and alleviate the narrowing of airway		
11	Complications of asthma in children with asthma such as crisis asthmatic attack.		
No	Practices about Asthma	Answer	
		Yes	No
1	I give the prescribed medication to children with Asthma (such as nebulizers) when needed.		
2	I act to provide safe and healthy environment free of irritants, which have negative effects on children with asthma.		
3	I provide educational programs to increase awareness of children who have Asthma about their disease.		
4	I provide educational programs to the teachers about care of children who have Asthma.		
5	I provide educational programs to the families about care of children who have Asthma.		
6	I prepared a therapeutic plan (protocol) to manage asthmatic attacks for children who have asthma.		