

## Comparison of Environmental Health with and Without School Nurses in Iranian Public Schools for Girls

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### ABSTRACT

**Background:** Our children's optimum health is among the most basic aims of many international organizations. For youngsters to learn, to achieve their full potential, it is essential to take into account the environment in which they learn and the competence of school nurses in their schools, hence, the basis for this scientific discussion. This study is a descriptive and analytical study that aims to compare the environmental health of schools with and without nurses.

**Methods:** A survey was recently conducted, taking samples from 10,511 primary school girls in a random sampling.

**Results :**Based on that data, significant differences were observed in some cases, while in other cases, significant differences were not. There is a direct tie-in between the presence of competent, certified school health nurses in schools and improvements in the overall environment of the schools themselves. Although creating such conditions will be a multi-dimensional challenge – and other causes and variables besides the effect of competent school health nurses will be a large part of surmounting that challenge – the effort will be worth it.

**Conclusions:** As we will see, a comprehensive review of these factors could lead to more efficient use of resources (labor, budget and time), and pave the way for clearer standards for training programs, designed to provide schoolchildren with the proper environment to do their best.

**KEY WORDS:** School nurse, elementary schools, environmental health.

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### INTRODUCTION

The 18th and 19th centuries were marked by poor conditions in communities, schools, prisons and mental health facilities. Sharp increases in population were offset by rising death rates, particularly for children before their first birthdays, which begat a need for greater public health education throughout the world. Reform began with the advent of the Industrial Revolution in Britain, as public health institutions were founded to combat the spread of such diseases as yellow fever, cholera, smallpox, typhoid and typhus, a fight that bore fruit in community health care, especially in the field of child care and environmental health in schools by the first half of the 20th century(2).

In many areas, especially in the field of community health care, many students in many schools and their parents were not financially well off and could not afford the best health care. Moreover, the public schools were considered places strictly for children to learn to write, read and remember information. However, more recently, development planners increasingly viewed schools as important social institutions within the community, not only providing an environment for children and adolescents to grow and develop mentally and socially, but as important bases for family and community interest. Statistics indicate that addressing children's and adolescents' health status not only improved society's overall health, but also minimized financial losses resulting from increasingly prevalent chronic diseases. Such bodies as the World Health Organization (WHO) and the United Nations' International Children's Emergency Fund (UNICEF) have teamed up in recent years up to produce papers addressing practical measures to improve elementary school health education programs in its member states, in an effort to improve general health conditions by 2000. In many countries around the world, the role of implementing these programs was performed by the school health nurses, following the innovative lead of Lillian Wald in the U.S. Now, there are about 45,000 school nurses working in schools around the world. ([http://en.wikipedia.org/wiki/School\\_nursing](http://en.wikipedia.org/wiki/School_nursing)).

In Iran, the role of the school health nurse position within the organizational chart for ministry of health and medical education has not been a clearly defined one. As a result, this job was done by those outside the nursing profession, called school health-care providers; Iran now employs 6,000 of these health-

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care providers, aimed at providing a healthy and hygienic environment. Environmental health in society is of crucial importance to everyone now and different people have tailored health concerns to their own individual needs. Hence responsible organizations have recognized this need to improve this important program. Especially, it is important to place children's health programs in higher priority due to their high vulnerability. Given that schools are the children's second home, and that children's health concerns could otherwise be left behind, a lot of health planners had to focus their attention on the schools, in Iran as elsewhere in the world. Health-care teachers in schools are the frontline soldiers in the promotion of this goal because they know the standards and facilities, and thus are in a position to make the environment optimal. Previously, the Iranian school was not focusing on environmental health issues, therefore, little attention was given to the impact of training students about good health habits; for example, even though schools trained youngsters to wash their hands before eating or after using the bathroom, the hand-washing facilities were not provided for children, hence, training programs did not succeed. Education and a proper health environment had, to borrow a phrase, to go hand-in-hand. A properly sanitized school environment should include the following:

- 1) Design building features that should suit children's development and educational programs.
- 2) A comfortable environment with appropriate seating and lighting. Education experts and psychologists have made recommendations on the type of paint color to use for an appropriate environment to boost students' performance.
- 3) Toilet and washing facilities, and drinking fountains.
- 4) Planning and forecasting facilities for emergency care and transportation.
- 5) Implementation of improvements and cleaning practices in different parts of the building.
- 6) Planning all students' entertainment.
- 7) Planning daily school activities, taking into account the children's ages, their social, intellectual and physical needs.
- 8) An organized school lunch program, including healthy foods and a comfortable eating facility.
- 9) Waste disposal

Health-care providers involved in the care, feeding and safety of the youngsters should do the following:

- 1) Check the health and safety aspects of school standards with regard to:
  - a) The location of the school
  - b) The status of drinking water
  - c) Garbage and sewage disposal
  - d) A sufficient number of clean toilets and bathroom
  - e) Sufficient number of clean drinking fountains
  - f) Buildings should be monitored, regarding:
    - Quality of light, air, temperature, moisture, cleanliness of walls, roofs, and floors; installation of safe electrical boards, for optimum space, light and student visibility; review the safety status of corridors, stairs, windows and schoolyards.
- 2) Combating insects, rodents and other pests
- 3) Monitoring for nutrition
- 4) Monitoring of the cleanliness and work of food suppliers and food handlers.
- 5) Considering training youngsters' health issues and concerns the most important task of school health nurses.

The study detailed ecological conditions and the dimensions and the impact of competent school health nurses on the success children would have in achieving their goal of gaining the best education possible in primary schools, which is one of the most important challenges in their life. Finally, it's up to the school health nurses to provide youngsters with that healthy advantage in making that possible.

## **METHODOLOGY**

A survey was recently conducted, taking samples from 10,511 primary school girls in a random sampling. The sample included 200 Iranian elementary school girls, along with 100 school health nurses, while 100 other schools without school health nurses were placed in a control group. Information was gathered using direct observation of the form control list which included 30 questions in 10 different situations and the differences compiled and analyzed using the Chi Square method.

The study touched on climatic differences that could influence different construction standards and how susceptible the schools were to diseases. Hence, we tried to choose factors that have more consistency, so that different climatic conditions would not influence them. Such factors as environmental health, cleanliness of the bathrooms, sinks, drinking fountains, cafeterias or other places where food was served, cleanliness also of classrooms, schoolyards, hallways, offices and the efficiency of waste disposal were all considered, along with building safety. For each of these indicators respectively, one or more considerable characteristics are identified. (Table 1)

**Table 1- The relation between 10 estimated parameters and their associated characteristics**

1	Toilet	Status of a toilet cleaning toilet areas
2		Toilet bowl cleaning
3		Disposal equipment
4	Bathroom	Bathroom cleanliness
5		Sink cleanliness
6		Availability of toilet soap
7	Drinking water	Cleanliness of glasses and dishes
8		Cleanliness of water taps
9		Availability of water taps relative to the number of students
10	Buffet and food supply area	Cleanliness of the buffet and food supply area
11		Cleanliness of food packaging
12		Freshness of perishable materials
13		Clean Clothing
14		Collection of uneaten food
15	Classrooms	Lighting of classes
16		Cleanliness of glass and windows
17		Air conditioning in classrooms
18		Safety in classrooms
19		Sufficient electrical plugs classrooms
20	Schoolyards	Cleanliness of schoolyards
21		Schoolyard waste disposal
22	Corridors	Cleanliness of corridor areas
23		Cleanliness of glass and windows
24		Cleanliness of safety corridors
25		Power outlets by the corridors
26	offices and administrative areas	Cleanliness of area
27		Cleanliness of glass and windows
28		Cleanliness of tables and chairs
29		Waste disposal
30	Waste disposal	Efficiency of waste disposal

## RESULTS

Research data was tabulated based on the presence (or absence) of school health nurses and the value of 19 variables including the schools' waste disposal, toilet bowl, water fountains, food cleanliness, availability of cleaning supplies, availability of soap, dish and cafeteria cleanliness, washroom area cleanliness, trash pickup in cafeteria, safety of electrical sockets, trash pickup in school yards and within school buildings, keeping food fresh, classroom window and glass cleanliness. Based on that data, significant differences were observed in some cases, while in other cases, significant differences were not.

The results of *Chi square* test in table 2, show that there is a significant relationship between the presence of schools nurses and 19 environmental health factors which has been tested. The factors included such items as the status of schools' waste disposal, toilet bowl, water fountains, food cleanliness, availability of cleaning supplies, availability of soap, dish and cafeteria cleanliness, washroom area cleanliness, trash pickup in cafeteria, safety of electrical sockets, trash pickup in school yards and within school buildings, keeping food fresh, classroom window and glass cleanliness.

In 11 other cases, the *Chi Square* test did not reveal significant differences between schools with school nurses and those without. Therefore it is not possible to judge accurately the relationship between the schools with and without school health nurses. In order to ensure that the test results were accurate, statistical tests with two degrees of freedom were done, the results of which are expressed in Table 3.

**Table 2: Relationship between environmental health factors and the presence or absence of a school nurse**

	Question Code	Answer Code	Calculated square	Chi	Significance level
1	30	Waste in school	13.52		0.999
2	2	toilet bowl cleaning situation	26.650		0.999
3	7	Dish Cleaning	23.93		0.999
4	13	Food Clothing Supplier	20.98		0.999
5	3	Appearance after waste disposal	20.83		0.999
6	6	Availability of toilet soap	19.75		0.999
7	10	Cleanliness of cafeteria	16.96		0.999
8	1	schoolyard cleaning	12.79		0.99
9	14	Cleanliness of toilets	12.73		0.99
10	19	collection of waste from	12.68		0.99
11	20	Electrical socket safety in classes	10.34		0.99
12	22	school yard cleaning	9.14		0.95
13	29	Cleanliness of hallways	8.99		0.95
14	12	Waste collection from administrative office	8.062		0.95
15	5	Freshness of perishable materials	7.97		0.95
16	18	Toilet bowl cleaning	7.85		0.95
17	21	Schoolyard waste disposal	7.64		0.95
18	4	Status of a toilet cleaning toilet areas	7.31		0.95
19	16	Cleanliness of glass and windows of classrooms	6.65		0.95
20	23	Cleanliness of glass and windows of corridors	5.79		-
21	27	Cleanliness of tables and chairs in administrative area	4.76		-
22	17	Air conditioning in classrooms	4.26		-
23	8	Cleanliness of water taps	3.38		-
24	24	Corridors waste disposal	3.16		-
25	11	Cleanliness of food packaging	2.61		-
26	9	Availability of water taps relative to the number of students	1.93		-
27	26	Cleanliness of administrative area	1.87		-
28	15	Lighting of classes	1.78		-
29	25	Power outlets by the corridors	1.23		-
30	28	Cleanliness of glass and windows of office administrative area	0.29		-

**Table 3: values confidently expected by 95%, 99%, 999% and two degrees of freedom**

DF	0.95	0.99	0.999
2	5.991	9.210	13.816

Focusing on environmental health in schools, this category has been divided into components. One of these components compares the difference between toilet and washroom cleanliness and the presence or absence of school nurses.

**Ratio difference test**

P1 = groups with school nurses considered good and acceptable = 23 +72

P2 = group without school nurses, good and acceptable = 37 +47

**P1 =95 P2 = 84**

**N1 = N2 = 100**

**P1 = F1/N1 P1 = 0.95**

**P2 = F2/N2 P2 = 0.84**

**P = (F1 + F2) / (N1 + N2)**

**P = (95 + 84) / (100 + 100)**

**P = 179 / 200**

**P = 0.895**

**Q = 1 - 0.895 = 0.105**

**{H0: p1 = p2**

**{H1: p1 > p2**

$$Z = \frac{p_1 - p_2}{\sqrt{pq\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

$$Z = 0.95 - 0.84 / \sqrt{0.8950.105} (2/100)$$

$$Z = 0.11 / \sqrt{.09397 \times 0.02}$$

$$Z_{ob} \# 2.54$$

$$05 \quad Z_{\alpha} \rightarrow 1.65.0 \quad \alpha = \rightarrow Z_{ob} > Z_{\alpha}$$

$$H_1 \rightarrow \text{Confirming hypothesis}$$

Survey data from school toilet hygiene and toilet facilities in schools with and without school nurses, along with inferential test statistics, indicate that toilet and washroom hygiene in schools with school nurses was better than those schools without nurses.

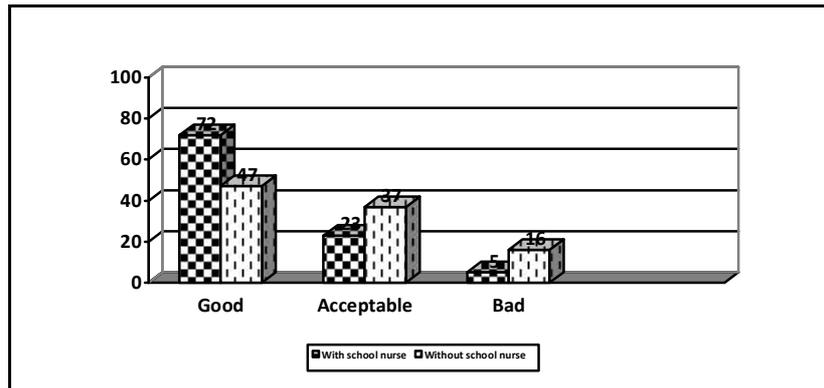


Figure 1: compares health status with toilet and bathroom washroom hygiene in schools with and without school health nurse

Chart 1 compares toilet and washroom hygiene in schools with and without nurses. Based on the results of inferential statistics, the other conditions associated with dish and cafeteria cleanliness found that the presence of school nurses was better than those lacking a nurse.

**Ratio difference test**

P1 = Department of Health statistics tracking schools with nurses, good and acceptable = 54 + 39  
 P2 = Group without nurses, good and acceptable = 38 + 44  
**P1 = 93    P2 = 82**

**N1 = N2 = 100**

**P1 = F1/N1            P1 = 0.93**

**P2 = F2/N2            P2 = 0.82**

**P = (P1 | P2) / (N1 | N2)**

**P = (93 + 82) / (100 + 100)**

**P = 175 / 200**

**P = 0.875**

**Q = 1 - 0.875 = 0.125**

**{H0: p1 = p2**

**{H1: p1 > p2**

**z = p1 - p2 / \sqrt{pq} (\frac{1}{n1} + \frac{1}{n1})**

**z = 0.93 - 0.82 / \sqrt{0.875 \times 0.125} (2/100)**

**Z = 0.11 / \sqrt{.109375 \times 0.02}**

**Zob # 2.35**

**α = 0.05**

**Zα → 1.65 → Zob > Zα**

**H1 → Confirming the hypothesis**

Based on the data measuring other components of school health such as classroom, office and administration area cleanliness -- with and without school nurses -- interestingly, no significant differences have yet been seen.

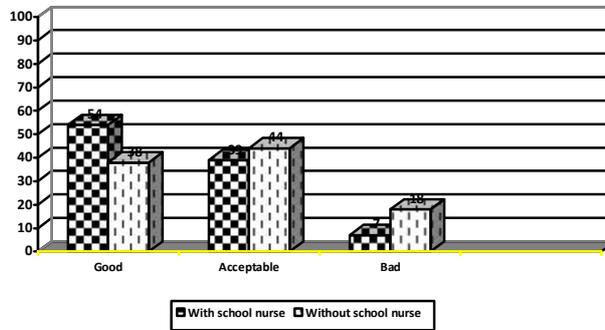


Figure 2: compares the status of drinking water and cleanliness of such fountains, in schools with and without nurses.

**Ratio difference test**

p1 = Group A, the good and acceptable= 53 + 39

P2 = Group B, the good and acceptable = 53 + 33

**N1 = N2 = 100**

**P2 = F2/N2      P2 = 0.86**

**P = (F1 + F2) / (N1 + N2)**

**P = (92 + 86) / (100 + 100)**

**P = 178 / 200**

**P = 0.890**

**Q = 1 - 0.890 = 0.110**

**{H0: p1 = p2**

**{H1: p1 > p2**

**z = p1 - p2 / √pq(1/n1 + 1/n2)**

**Z = 0.92 - 0.86 / √0.89 × 0.11 (2/100)**

**Z = 0.06 / √0.0979 × 0.02**

**Zob # 1.36**

**→ Zob < Zα 0.05 Zα → 1.65**

**H1 → Refuting the hypothesis**

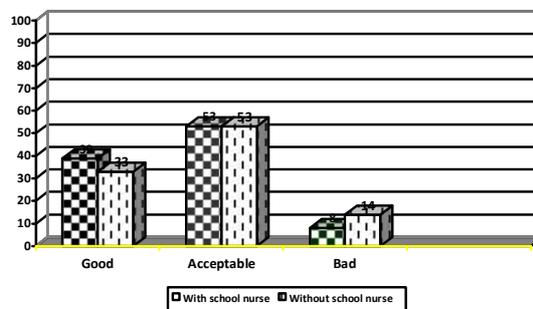


Figure 3: Chart compares the difference in health status and classroom and administration area cleanliness between schools with and without a school health nurse.

Comparison of data from the cleanliness of schoolyards and corridors in schools with and without nurses, along with inferential test statistics, indicate that school corridors and schoolyards are cleaner than those without health nurses.

**Ratio difference test**

P1 = Group A, the good and acceptable = 49 + 44  
 P2 = Group B, the good and acceptable = 50 + 35  
**N1 = N2 = 100**

$$P1 = F1/N1 \quad P1 = 0.93$$

$$P2 = F2/N2 \quad P2 = 0.85$$

$$P = (F1 + F2) / (N1 + N2)$$

$$P = (93 + 85) / (100 + 100)$$

$$P = 178 / 200$$

$$P = 0.890$$

$$Q = 1 - 0.890 = 0.110$$

$$\begin{cases} H_0: p_1 = p_2 \\ H_1: p_1 > p_2 \end{cases}$$

$$z = p_1 - p_2 / \sqrt{pq(\frac{1}{n_1} + \frac{1}{n_2})}$$

$$Z = 0.93 - 0.85 / \sqrt{0.8950 \times .110(2/100)}$$

$$Z = 0.08 / \sqrt{0.09397 \times 0.02}$$

$$Z_{ob} \# 1.81$$

$$1.65.0\alpha \quad Z_{\alpha} \rightarrow =05$$

$$\rightarrow Z_{ob} > Z_{\alpha}$$

**H<sub>1</sub> → Confirming the hypothesis**

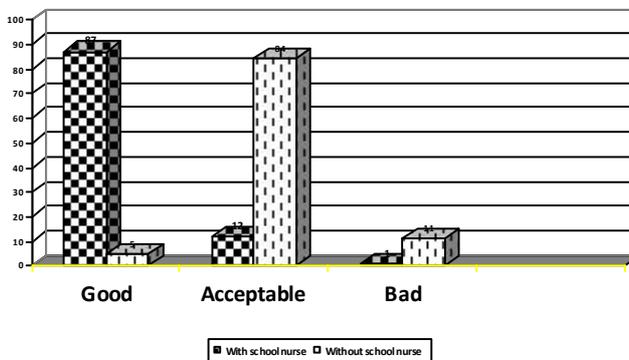


Figure 2: This chart compares the effects of accumulated waste in schools with a nurse

The results from inferential statistics about the investigation of waste disposal in schools with school nurses to those without, indicate that nurses are effective in influencing the removal of waste.

**Ratio difference test**

P1 = Group A, the good and acceptable = 87 +5  
 P2 = Group B, the good and acceptable = 12 +84  
**N1 = N2 = 100**

$$P1 = F1/N1 \quad P1 = 0.99$$

$$P2 = F2/N2 \quad P2 = 0.89$$

$$P = (F1 + F2) / (N1 + N2)$$

$$P = (99 + 89) / (100 + 100)$$

$$P = 166 / 200$$

$$P = 0.940$$

$$Q = 1 - 0.940 = 0.060$$

$$\begin{cases} H_0: P_1 = P_2 \\ H_1: P_1 > P_2 \end{cases}$$

$$z = \frac{p_1 - p_2}{\sqrt{pq\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

$$Z = \frac{0.99 - 0.89}{\sqrt{0.940 \times 0.060(2/100)}}$$

$$z = 0.10 / \sqrt{0.05640 \times 0.02} \quad Z_{ob} \# 2.98$$

$$\rightarrow Z_{ob} > Z_{\alpha} = 0.05 \quad Z_{\alpha} \rightarrow 1.65$$

$H_1 \rightarrow$  Confirming the hypothesis

## DISCUSSION

The results of this study, taking 19 environmental health variables into account, showed significant differences between schools with nurses from those schools without. Moreover, significant differences were noted in environmental health conditions in four major school districts with nurses, at five of the schools studied, compared to those schools without a coach, but these results have not shown significant differences in classroom and administrative area cleanliness in schools with or without nurses. . Perhaps that's because officials took a stronger and more direct role in the management and monitoring of health-care compared to nurses. This seems to show that if the sphere of authority and direct supervision of school nurses can be developed, the program can be all the more effective. There may still, however, be the impression that there is no real and valid difference between schools with or without nurses.

Perhaps the reason is that school authorities pay more attention to the visual aspects of health, cleanliness and hygiene, on their own, independently of the presence or absence of school nurses. Also, there were did not appear to be significant differences in some special cases such as food packaging during the school health office study, because cafeteria, food distribution sites and food schools tend to use standard packaging; on the other hand, lack of sufficient nurses relative to the number of students, in some cases, along with limited financial resources and limitation of authority, curtailed their effectiveness in dealing with the school health problem in recent years. Another factor hampering the role of health educators in schools could be the uncertainty of their tenure at schools; but such is a problem the world over. For now, the continuous presence of nurses in schools in addition to improved health services in schools helps improve students in their studies, and teachers, in the performance of their jobs, and helps administrators solve the same underlying cause of many environmental, physical and emotional health problems within students. (15,17)

In this study, we discussed the relevance of physical and environmental variables as well as schools and ecological conditions as major factors affecting the physical and mental health of children and students, administrators and school personnel. Some of these factors in schools in remote areas of Iran might not measure up to international standards; , such as one's calling for air that is clean and at the proper temperature, proper classroom lighting and colors, This study has focused on the impact on the school nurses on overall school health. Atmosphere in the classes does have a significant impact on what children learn. As students and teachers must be in class for several hours a day, it's vital that they are able to focus on what's being taught and that they are comfortable in the classroom. What's more, proper ventilation is of great importance to schools. Proper ventilation in classes prevented many diseases, particularly asthma and respiratory allergic diseases. In some schools, adequate ventilation was lacking, resulting in increased incidents of respiratory diseases. In this regard, school nurses could be very effective in preventing increases in these diseases, and could help create suitable conditions for classes. To prevent asthma attacks, students should be trained to recognize the danger signals. (6.18)

Similarly, the role of good nutrition in schools has been examined, along with cafeteria and overall school cleanliness, in conjunction with competent school nurses. It is essential to provide students with adequate and healthy food, packaged with health and cleanliness in mind preventing the sale of foods which violate health standards; One major problem in schools the world, including Iran, has been that of obesity, (9. 14. 13. 1)

This study has identified the role of school nurses in the use of appropriate packaging and food preparation. School nurses can help ensure appropriate and clean packaging of food. Nurses can also see to it that youngsters get proper nutrition and training to prevent the growth of obesity, as well as proper dental care.

Based on this study, school nurses can play significant roles in reinforcing the importance of cleanliness, standardized sanitary services and proper environmental conditions. Although the situation has not been very successful regarding dish and glass cleanliness of some parts of the school. Cleanliness in schools is of great importance in preventing possibly kidney and urinary diseases. . Many experts are convinced that the value of environmental health factors in their educational goals is paramount. On the other hand, many of them are believed to be factors in the occurrence or prevention of many mental illnesses among students. Teachers and other school personnel can play a significant role in combating these, too; (12. 13)

Today, many developed countries in the world community employ school nurses. Theirs are vital and responsible positions, encompassing knowledge of the stages children go through, of nursing practices, sanitation, and communication with teachers and parents. Thus, they have much to offer children and their school system. Nurses can also be supported in their roles by school psychologists, to spot and possibly treat any emotional problems the children may have, prevention being the key early on.

It is recommended that if facilities are provided in cooperation with the Ministry of Health and Education, graduate nurses and psychologists could be employed in schools thus, saving time and money to train school nurses helping to create more favorable conditions in schools, enabling teachers to be more effective, and help children learn to their full potential.

## **Conclusion**

There is a direct tie-in between the presence of competent, certified school health nurses in schools and improvements in the overall environment of the schools themselves. Although creating such conditions will be a multi-dimensional challenge – and other causes and variables besides the effect of competent school health nurses will be a large part of surmounting that challenge – the effort will be worth it.

As we will see, a comprehensive review of these factors could lead to more efficient use of resources (labor, budget and time), and pave the way for clearer standards for training programs, designed to provide schoolchildren with the proper environment to do their best.

## **REFERENCES**

- 1- AlNaqeeb, B. (2010), The role of parents and schools in preventing childhood obesity. *UCQ Nursing Journal of Academic Writing*, 37-44.
- 2- Bonaiuto, M. M. (2007). *School Nurse Case Management: Achieving Health and Educational Outcomes. The Journal of School Nursing*, 202-209.
- 3- David M B Hall, (1999), *School nursing: past, present, and future. Arch Dis Child*; 81:181–184
- 4- Janice Denehy Executive, (2001), *Health Education: An Important Role for School Nurses. The Journal of School Nursing. vol. 17 no. 5* 233-238.
- 5-Lawrence J. Lewandowski, Brian Rieger, (2009), *The Role of a School Psychologist in Concussion. Journal of Applied School Psychology, Volume 25, Issue 1, pages 95 – 110.*
- 6-Lisa Cicutto, (2009), *Supporting successful asthma management in schools: The role of asthma care providers. J ALLERGY CLIN IMMUNOL.*
- 7-Massachusetts Department of Education, (2002), *Managing Life Threatening Food Allergies in Schools.*
- 8-M. Deschesnes, F. Trudeau and M. Kébé, (2009), *Factors influencing the adoption of a Health Promoting School approach in the province of Quebec, Canada. Health Education Research.*
- 9-Mudd, K. E., Noone, S. A., (1995). *Management of severe food allergy in the school setting. Journal of School Nursing: 11(3), 30-32*
- 10-Powers, J., Bergren, M. D., Finnegan, L. (2007), *Comparison of School Food Allergy Emergency Plans*

to the Food Allergy and Anaphylaxis Network's Standard Plan. Retrieved February 5, 2008, from [www.nasn.org](http://www.nasn.org)

- 11-Small ML, Everett Jones S, Barrios LC, et al., (2000), School policy and environment: results from the School Health Policies and Programs Study. *J Sch Health*.71 (7):325-334.
- 12-Solum, Linda L. and Marjorie A. Schaffer, (2003), "Ethical Problems Experienced by School Nurses," *Journal of School Nursing*, Vol. 19, No. 6, pp. 330–337
- 13-Scherer, P., (2009), The obesity epidemic in children is causing flatfeet. *Podiatry Management*, 28(7), 159.
- 14-Story M, Kaphingst KM, French S., (2006), The role of schools in obesity prevention. *Future Child*. 2006; 16:109–42.
- 15-Telljohann S, Dake J, Price J., (2004), Effect of full-time versus part time school nurses on attendance of elementary students with asthma. *J Sch Nurs.*; 20(6):331–334.
- 16-Taliaferro, Vicki (2005), "Where Oh Where Are the School Nurses? Staffing in School Health Service Programs," *NASN Newsletter*, pp. 16–20.
- 17-US Department of Health and Human Services. *Healthy People, (2010), Understanding and Improving Health Objectives for Improving Health*. 2nd ed, 2 volumes. Washington, DC: US Government Printing Office
- 18-Wolfe LC, Selekman J., (2002), School nurses: what it was and what it is. *Pediatr Nurs*. 28(4):403–407.