

Health Promotion program to Improve the Lifestyle of School Children Living in Slum Areas in Helwan Governorate

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Abstract: The school years are a time when the foundations of a healthy lifestyle are formed and when health promotion programs are likely to have the greatest impact. **The aim** of this study was to evaluate the effect of health promotion program on improving lifestyle of school children living in slum areas. **Design:** A quasi –experimental design was used. **Setting:** The study was conducted at two governmental primary schools in Azbat Elwalda, in Helwan Governorate **Sample:** A stratified multi-stage cluster random sample was used for selection of school children in slum areas ,the total number of governmental primary schools in Azbat Elwalda are (3),two were chosen randomly. One class from fifth grade and one from sixth grade were selected randomly from each school. The total number of children for two schools were 200 (both sexes).**Tools: 3 tools were used 1)** A structured interviewing questionnaire was used to assess students socio-demographic characteristics, students' perception of social and physical environment of school, students' common health problems during the past two years and students' knowledge about healthy life style .These tools were used before and after program. **2)** A physical examination to assess the student from head to toe. **3)** An observational checklist for assessing in and out school's environment. **Results:** the study confirms that diseases of respiratory system had the highest frequencies among the students as follows: less than two fifths for common cold, more than one third for tonsillitis and bronchitis and more than one quarter for influenza. There was difference between before and after program implementation concerning students' health promoting life style, perception of social and physical school environment. The differences were statistically significant for all of variables ($P = < 0.001$). **Conclusion:** The study concluded that students perception improved toward their social, physical school environment and their knowledge about healthy life style after implementing the health promotion program .This improvement was proved statistically **Recommendations :** The study recommended that a health promotion program are strongly needed to school children to improve their lifestyle especially school children living in slum areas and the necessity of improving school environmental sanitation for the promotion of students health.

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Introduction

Children are the greatest investment of any community and the main basis for its development. School children constitute a significant and important sector of the population who are constantly growing and developing. This basic dynamic character accounts for their increased vitality and vulnerability and requires specific health promotion in relation to seeking health and using various resources to attain optimum health (Sherman et al., 2002).

In Egypt population of the age from 6-12 are 7.4464 million. School students in Egypt are influenced by the general problem of childhood, high density in classes (70 student / class), environmental pollution and educational stress as many are forced to operate in two shifts in a day (WHO, 2004).

The environments in which children live affect their health. In developing countries recognized risk factors; are lack of sanitation, poor water supply, poor food safety and air pollution (Tallinn, 2008).

Slums are those areas which are characterized by insecure residual status, poor structural quality of house, overcrowding, inadequate access to safe water and sanitation. Therefore, slum dwellers are more vulnerable to infections which results in deterioration of their nutritional status (Bisai et al , 2009).

Health promotion in schools can improve children's health and well-being. Among the most effective programmes are those that promote healthy eating and physical activity. School children of slum areas are exposed to many health risks mainly related to their lifestyles, behaviours and environmental factors which they have an impact on health-related quality. Health risks such as childhood overweight and obesity and type 2 diabetes mellitus. Lifestyles are probably the most important determinants of changes in health status (Stewart- Brown, 2006).

The school nurses take a leadership role in serving as the coordinator of all school programs .In order to be effective in assisting students to meet their optimal

potential in the classroom, the school nurse needs to have knowledge of current trends and practices in medical/nursing care and have open systems of communication to coordinate care (**Edwards,2006**).

Magnitude of the Problem

People living in slum areas are more likely to suffer from improper housing, poor socioeconomic characteristics, environmental pollution and absence of infrastructure and basic services. High health problems for children run riot in slum areas, (**Metwally & Olsen; 2005 & Peace 2010**)

In Egypt, the school aged children particularly in slum areas are vulnerable to a range of health risks that may affect them immediately as infectious diseases, malnutrition, accidents or sexually transmitted diseases and in the future as cardiovascular diseases and cancers. These risks may originate as a result of the life style and health status. School health programs are vital part of public health services and education. The school health nurse is the first responsible person to teach children about disease, hygiene, risk reduction, sexuality and decision making. The school nurse must be sensitive to dynamic nature of this stage, in order to prevent disease, protect them from accidents and promote health through health education about nutrition, exercise, hygienic measures, and healthful environment.

Aim of the study

This study was carried out to evaluate the effect of health promotion program on improving the lifestyle of school children living in slum areas in Helwan Governorate through:

- Assessing school children health promoting needs regarding their life style.
- Assessing in and out school's environment.
- Developing and implementing health promotion program based on the previously detected needs of school children toward their life style.
- Evaluating the degree of the school children improvement toward their health promoting life style.

Hypothesis:

A health promotion program will improve student's perception toward their physical, social, school environment and also improve their lifestyle in both two schools in slum areas.

Subject and Methods

Design:

A quasi experimental design was used to conduct the study.

Setting :

The study was conducted at two governmental primary schools in Azbat Elwalda, Helwan namely: Asmaa Bent Abo Baker and Naguib Mahfouz.

Sample:

A stratified multi-stage cluster random sample was used for selection of school children in slums areas.

First stage: The total numbers of governmental primary schools in Azbat Elwalda is (3), two were chosen randomly for the conduction of the study.

Second stage: One class from fifth grade and one from sixth grade were selected randomly from each school.

Third stage: All school children in the selected classrooms were taken, the total numbers of children for the two schools were 200 (both sexes) according to certain criteria:

- 1- Their aged ranged between 10-12 years, which are considered as preadolescents and health promotion program will have great benefit for maintenance of their health.
- 2- They got acceptance letter from their parents to participate in the study.

Tools of the study:

For data collection three tools were used:

The first tool was a structured interview questionnaire developed by the researchers after reviewing of related literature, it consisted of 3 parts:

Part I: Students' socio -demographic characteristics, which include: age, sex, and class grade, and family characteristics as parent's level of education, marital status, occupation, family size and family type.

Part II : This part is a set of questions covering twelve major areas pertaining to students' common health problems during the past two years as regards nervous system (visual disturbance, eye inflammation & headache), respiratory problems (common cold, bronchitis, asthma, influenza, tonsillitis, pneumonia & TB),skin disease (eczema, scab, acne & warts), gastrointestinal problems (diarrhoea, constipation & food poisoning), school accident (wound & fracture), circulatory problems (rheumatic fever & cardiac problems), back pain ,teeth problems, and diabetes mellitus.

Part III: This part deals with students' perception regarding:

-Social school environment using a tool adopted from **McLellan (1999)**.

It includes seven items, which explored students' perception toward teacher support, peers support,

educational achievement, school schedule, school curriculum, and school health services.

-Physical school environment using a sheet constructed by the (**General Health Insurance, and WHO (2001)**). It included items related to safety of school, personal hygiene, environment, and items related sanitation of school environment.

Part IV: Included student's lifestyle Profile according to (**Cookfair, 2008**). This tool is covering five major areas. Self health responsibility, eating habits and nutrition awareness, physical activity, stress management and environment safety. These tools were used before program implementation which parts III and IV were used before and after the program.

Scoring system:

This tool included 5 items: related to health self responsibility contained 18 sentences, (total score = 36), eating habits 13 sentences (total score= 26), physical activity 7 sentences, (total score =14), stress management contained 14 sentences, (total score =28), environmental sensitivity contained 12 sentences (total score = 24). The students responses were scored as follows, always = 2, sometimes =1, and never = 0. The investigator categorized students perceptions as satisfied when the score is 75% or more, and unsatisfied if less than 75%.

The second tool was a physical examination which included physical examination sheet (**Fuller & Schaller, 2005**) to assess the student from head to toe, measure weight and height and personal hygiene. Body Mass Index (BMI) was used to determine the degree of obesity. According to **Dudek, (2003)** scale BMI is divided into three categories >20 is considered underweight, 20->26 is considered normal, 26->30 is considered overweight or obese.

The third tool was an observational checklist. It included two main parts:

Part I: Assessing school environment, it included items related to school place, design, playground, classroom, water supply, water closets, waste disposal and canteen (buffet). The investigator scored the outcomes as present or not present

Part II- Assessing out school's environment, it included items related to building construction, street vendors, sufficient street width, garbage disposal, sewage disposal, insect and rodents and animals excreta.

Statistical Design:

Collected data were categorized, coded, entered and analyzed using the statistical Package for social sciences (SPSS) version 12.0. The analyses carried out included descriptive statistics. The level of statistical significance was set at p-value < 0.01

Field work:

Official letters from the Faculty of Nursing, Helwan University were forwarded to the Ministry of Education with the aim of the study to obtain their permission to visit the schools and conduct the study.

After approval of the Ministry of Education, official letters were addressed to the directors of the schools. Each director was informed about the time and date of data collection.

Each student was interviewed individually after explaining the purpose and method of the study and obtaining his / her approval to participate in the study with confidentiality.

Content validity of the tools was tested by a panel of five experts in community health nursing field, pediatric health nursing and corrections were done accordingly based on their responses.

A pilot study was conducted on 20 students, who were excluded from the main study sample, to test the applicability of the tools. The necessary modifications were done accordingly.

The health promoting life style program was developed based on review of related literature and assessment tools (pretest).

Data were collected during the period from October, 2009, to March 2010

Time plan was established and the students were organized into 6 groups (30-35 students).

The program in a school day starts from 8 .00 a.m. to 2 .00 p.m. Each group of students attended 6 sessions. The duration of each session was 20-45 minutes according to the presented items. Each session was followed by a summary of the essential healthy life style items discussed.

Ethical consideration:

Consent to participate in the study was obtained from parents of school children.

Confidentiality was assured to all children of the study.

The health promotion program construction. Contained 3 phases:

Phase I: Preparatory phase was done by using the assessment tools after being revised and tested for general information about healthy life style, In relation to student's self health responsibility, as eating habits, nutrition awareness, physical activity, stress management and environmental safety.

Phase II: Developing and implementing the program .The general objective of the program was to improve the lifestyle of school children living in slums areas in Helwan Governorate. The program contents covered the following major area: general information about healthy life style, in relation to students' self-health responsibility, eating habits, nutrition awareness,

physical activity, stress management and environmental safety.

The methods used were lectures, discussions, brainstorming, demonstration and re-demonstration. Data show and handouts were used as teaching media,

Phase 3: Evaluation was done to measure the difference between pre-post test.

3. Results

Figures (1, 2): show the frequency distribution of schools, and class grades among the sample; 50.5% of school children were from Naguib Mahfouz School. In relation to class grade, 52.5% of children were in 5th grade while 47.5% were in 6th grade.

Table (1): classifies the socio-demographic characteristics of school children. The table reveals that the school girls were prevalent more than males in both schools (61.5%). Concerning parents' education, only 2.0% and 7.0% of fathers and mothers had university education respectively. In relation to father occupation more than half of fathers (52.5%) were workers, while 37.0% were officers. More than half (57.0%) of mothers were housewives while 43.0% were workers. As regards family size, 59.0% were <4, while 41.0% were ≥4. Concerning family type, only 14.0% of families were single parent (dead), while 50.0% were extended families.

Table (2): demonstrates that 22.5% of the students health problems were visual disturbance, 20.5% of students complain from eye inflammation, and 16.0% from headache. Diseases of respiratory system had the highest frequencies among the students as follows: 38.5% for common cold, 34.0 % for tonsillitis, 32.5 % for bronchitis, 29.5 % for influenza, 11.5 % for asthma, and an equal percentage of 11.0 % for T.B. and 9.0% for pneumonia. As regards skin diseases, the table shows that acne was found among 18.0 % of students, followed by eczema 12.5 %, then wart 8.5 %. Scab had the lowest prevalence 2.5% among students.

In relation to gastrointestinal problems, stomach pain was prevalent among 28.0 % of students, followed by diarrhea 23.0 % and constipation 13.5 % .Food poisoning was found among 1.5% of students. Hepatitis A was found among 17.0% of students.

In relation to school accidents, more than one quarter 27.5 % of the students in the study sample reported wounds as accident in school, back pain among 30.0%. Regarding to circulatory diseases, minority of them (2.0%) complain from rheumatic fever and cardiac problems (2.0%) and the diabetes mellitus (4.5%).

In relation to teeth problems, results of the present study showed that 27% of the students in the two schools complained from teeth problems.

Table (3): shows the mean score of before and after program changes in promoting life style among

students. In relation to self health responsibilities, the mean was 21.2±2.0 before program increased to 28.2± 1.54 after program and the difference was statistically significant ($t= 25.5, p<0.001$). The mean nutritional awareness was 9.2± 1.8 before program increased to 18.2± 2.4 and there was a statistically significant difference ($t= 35.5$ at $p= <0.001$). In relation to the mean of physical activity it was 2.7 ± 1.0, pre-program, which increased to 8 .2± 3.2 after program and there was a significant difference ($t= 13.5$ at $p= <0.001$). The mean of stress management was 15.9± 1.6 before program, which increased to 20.5 ± 2.6 after program. As regards to the mean environmental safety, it was 13.8 ±1.7 pre-program and increased to 23.2±1.3 with a statistically significant difference ($t=15.8$ at $p= <0.001$).

Table (4): shows the mean score of students' perception of school environment and health promoting life style before and after the program. The table reveals change in student's perception of social and physical school environment after program implementation. The improvement or changes were statistically significant for all variables ($P = < 0.001$). As well, the total student's knowledge about health promoting life style improved after implementation of the program, ($p < 0.001$).

Table (5): displays mean score of student's perception of physical school environment according to the two selected schools. The mean score for Asmaa Bent Abo Baker was 39.5 ± 2.1 and for Naguib Mahfouz school 33.9 ± 2.3 with highly significant difference ($P<0.001$). However, there were no statistically significant differences in other variables.

Table (6): shows the correlation between promoting life style knowledge and students' common health problems. There was a highly statistically significant correlation between life style and student health problems.

Table (7): indicates that (33.5%) of students were under weight. The majority (81.5%) of the students had tooth decay, 48% complained from rhinitis, 36.5% had dandruff and 15% are wearing eye glasses. Regarding skin condition 5% had acne. Concerning personal hygiene for 40% of the students, personal hygiene was good.

Table (8): describes the school environment of students of the studied sample. The studied two schools were not away from noise and dusty places, canteens were not clean and no proper food preservation, no dry and clean water closets, no collection of refuse in baskets. In classes students' number was more than 30 students, while there was suitable classroom light, sanitary water supply and medical clinics. Only one school had neither sufficient classroom ventilation nor sufficient playground area.

Table (9): Reveals that in both schools slum environment had unsafe cluster of building, there were

vendors in the streets around schools and garbage was collected and thrown down in the streets. Out of both schools environment had no sanitary sewage systems, and insects and rodents spread in the street .In one of

the two schools there were no sufficient street width. Animals excreta were collects and thrown down in the street around only one school.

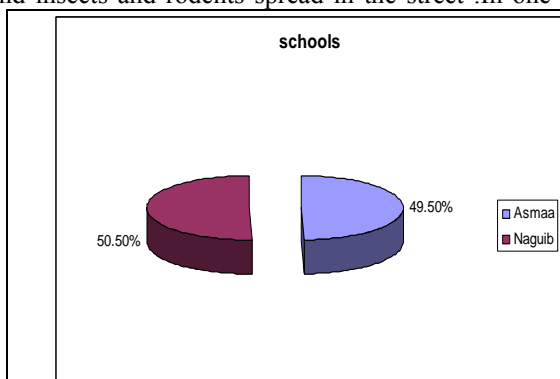


Figure (1) : Frequency distribution of schools among sample

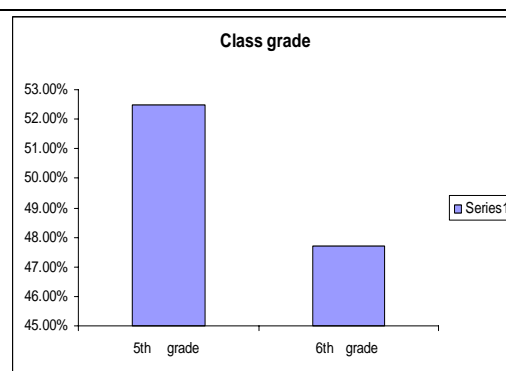


Figure (2): Frequency distribution among study sample related to class grade

Table (1): Students' socio-demographic characteristics.

Variable	No	%
Students' sex:		
-Male	77	38.5
-Female	123	61.5
Fathers education :		
- Illiterate	95	47.50
- Read and write	68	34.00
- Secondary education	33	16.50
- High education	4	2.00
Fathers occupation :		
- Workers	105	52.50
- Officer	74	37.00
- Retired	21	10.50
Mothers education :		
- Illiterate	58	29.00
-Read and write	66	33.00
- Secondary education	62	31.00
- High education	14	7.00
Mothers occupation:		
- Workers	86	43.00
- Housewives	114	57.00
Family size :		
<4	118	59.00
>4	82	41.00
Family types :		
- Nuclear	72	36.00
- Extended	100	50.00
- Single parent (dead)	28	14.00

Table (2): Shows distribution of students according to their self reported common health problems during the past two years.

Common Health Problems	No	%
Nervous system diseases :		
- Visual disturbance	45	22.50
- Eye inflammation	41	20.50
- Headache	32	16.00
Respiratory diseases :		
- Common cold	77	38.50
-Bronchitis	65	32.50
Asthma	23	11.50
- Influenza	59	29.50
- Tonsillitis-	68	34.00
-Pneumonia	18	9.00
T.B	22	11.00
Skin diseases:		
- Eczema .	25	12.50
- Scab	5	2.50
-Acne	36	18.00
-Warts.	17	8.50
Gastrointestinal problems :		
- Stomach pain-	56	28.00
- Diarrhea.	46	23.00
- Constipation.-	27	13.50
- Food poisoning.-	3	1.50
Hepatitis A.	34	17.00
School accidents :		
- Wound.	55	27.50
- Fracture	7	3.50
Circulatory diseases :		
-Rheumatic fever.	4	2.00
-Cardiac problems	4	2.00
Back pain.	60	30.00
Teeth problems	54	27.00
Diabetes mellitus	9	4.50

Table (3) : Mean score of student life style before & after implementation of the program.

Variables	Pre			Post			Paired t-test	
	Mean	±	SD	Mean	±	SD	T- test	P-value
Self health responsibility.	21.193	±	2.001	28.215	±	1.542	25.465	<0.001*
Eating habits nutrition awareness	9.249	±	1.822	18.245	±	2.354	35.456	<0.001*
Physical activity .	2.690	±	0.959	8.224	±	3.240	13.546	<0.001*
Stress management.	15.888	±	1.561	20.549	±	2.645	19.564	<0.001*
Environmental safety.	13.751	±	1.667	23.244	±	1.250	15.840	<0.001*
Total	66.376	±	4.217	89.914	±	10.236	29.922	<0.001

T: paired t-test Statistically significant at p<0.05

Table (4) : Mean score of students' perception of school environment &health promoting life style before & after the program.

Variables		Range			Mean ± SD			Paired t-test	
		T- test	P-value						
Students' perception of social school environment	Pre	22.000	-	34.000	27.751	±	2.365	35.542	<0.001*
	Post	34.00		47.00	45.872	±	5.635		
Students' perception of physical school environment	Pre	29.000	-	45.000	39.020	±	3.455	-29.609	<0.001*
	Post	40.73	-	55.746	49.853	±	4.268		
Total student knowledge about healthy life style	Pre	57.00	-	77.00	66.376	±	4.217	-29.922	<0.001*
	Post	70.00	-	121.00	89.914	±	10.236		

Table (5) : Mean score of students perception of social , physical school environment and total students health promoting life style according to the two selected schools.

Variables	School						Paired t-test	
	Asmaa Bent Abo Baker		Naguib Mahfouz		T-test	P-value		
	Mean	± SD	Mean	± SD				
Students' perception of social school environment	27.207	± 2.204	27.288	± 2.599	0.168	0.867		
Students' perception of physical school environment	39.472	± 2.081	33.956	± 2.256	12.581	<0.001*		
Total student knowledge about healthy life style	66.849	± 4.409	66.111	± 4.179	0.846	0.400		

Table (6): Correlation between promoting life style knowledge and students common health problems

Correlation between Knowledge and Problems	
R	P-value
0.622	<0.001*

Table (7): Distribution of students' health condition

Students' health Condition	No	%
Body Mass Index (BMI):		
- Under weight	67	33.5
- Normal weight	120	60
- Over weight	13	6.5
Hair:		
- Dandruff	73	36.5
- Nits-pediculosis	14	7
Eye:		
- Inflammation of eyelids	15	7.5
- Wearing eye glasses	30	15
- Visual measurement disorder	14	7
Ears:		
- Wax	2	1
- Discharge	3	1.5
Nose:		
- Rhinitis	96	48
Mouth:		
- Lips dry & cracked	41	20.5
- Tooth decay	163	81.5
Skin:		
- Acne	10	5
- Warts	0	0
Personal hygiene:		
- Good	80	40
- Poor	120	60

Table (8): Distribution of studied schools regarding their environment

School Environment	No	%
Place away from noise and dusty place	0	0
No. of students in the class:-		
- < 30	0	0
- 30+	2	100
Sufficient classroom area /students number	1	50
Good classroom ventilation	1	50
Good classroom light	2	100
Canteen clean and has proper food preservation	0	0
Presence of sanitary water supply	2	100
Water closets :		
- Dry and clean	0	0
- Sufficient water closets / children number	1	50
Waste disposal :		
-Collection of refuse in baskets	0	0
Sufficient playground area	1	50
Existence of medical clinic	2	100

Table (9): Distribution of studied Schools regarding their slums environment (n=2).

Slums Environment (Around the School)	No	%
Building construction:		
Safe and healthy building construction	0	0
Unsafe cluster of building	2	100
Street vendors:		
Present around the school	2	100
Not Present around the school	0	0
Sufficient wide streets :		
Yes	0	0
No	1	50
Garbage disposal:		
Collected and thrown down in special places	0	0
Collected and thrown down in the street	2	100
Sewage disposal:		
Sanitary sewage system	0	0
Cesspool	2	100
Streets free from insects and rodents:		
Yes	2	100
No	0	0
Animals excreta:		
Collected and thrown down in special places	0	0
Collected and thrown down in the street	1	50

4. Discussion

The health promoting school aims to achieving healthy life styles for the total school population by developing supportive environment conducive to the promotion of health (Scriven & Orme ,1996).

Socio demographic characteristics of the present study indicate that more than half of children were in 5th grade, while less than half were in 6th grade (Figure, 2). This study was in agreement with **Abd-Elhaleem (2004)**, who reported that two thirds of children were in different levels of education, especially primary schools.

The present study result showed that the school girls were more prevalent than males in both schools (Table 1). This study was disagreement with **Sedik (2002)**, who reported that males were more than females in school children especially in primary schools.

In relation to parents; education the study indicated that few of fathers and mothers had university education in both schools. In relation to father's occupation, more than half of fathers were workers, while more than one third was officers. As for mother's occupation less than three fifths were housewives while the rest of them were workers, (Table, 1). The present study was in agreement with **Elsamaloty (2000)**, who reported in his study that percent of illiteracy between family parents increased due to poverty and low of socio-economic standard. As well **Abd-Elhaleem (2004)** found that the majority of fathers and mothers had technical works, they were sellers also the majority of mothers were housewives.

The assessment of student's health problems in this study revealed that less than one quarter

complained from visual disturbances slightly more than one fifth of students complained either from eye inflammation or headache. Diseases of respiratory system were reported by more than one third of them who complained from common cold, while approximately one third had tonsillitis, bronchitis, and more than one quarter had influenza, and minorities of them complained from asthma, pneumonia and TB (table 2). These results were in agreement with **Radwan (2005)**, who reported that gradual progressive decrease in visual acuity during the school years especially eye inflammation and headache had been noted. Additionally the previous results were in consistence with a study carried out by **Viswanathan (2006)**, who stated that respiratory illness especially common cold, bronchitis, asthma, influenza, tonsillitis, pneumonia and TB were present in 17.2 % of the studied school age children at slums areas of Chennai. These health problems could be attributed unsafe school environment and slums environment in which the students live.

In relation to gastrointestinal problems, the findings of this study showed that more than one quarter of students had stomach pain followed by diarrhea, than constipation. Less than one fifth complained from hepatitis A, and the minority of them complained of food poisoning (Table,2).These results were in agreement with a study carried out by **Cohen(2003)**, who reported that almost half of a total of 858 school age children were sick due to gastrointestinal problems especially stomach pain, diarrhoea, constipation and 17 % of affected children have been suffering from hepatitis A.

In relation to teeth problems, results of the present study showed that more than one quarter of the students in the two schools complained from teeth problems. This result was disagreement with **Rosdad (2004)**, who reported that the school age children have the highest prevalence of teeth problems. Similarly **Abd El Aziz (2005)**, noted that tooth decay is due to inadequate knowledge about the importance of regular washing of teeth and its risk factors. The gastro intestinal problems may be due to eating contaminated street food, which the students buy from street vendors around school.

Findings of this study showed that less than one fifth of students in both schools complained from acne, while more than teeth from eczema, and minorities of them from warts and scab (Table2).In accordance, **Edemon (2002)** mentioned that acne is the major skin problem in children affecting 7% of them. Acne starts with increased sebum production stimulated by androgens during puberty. However **Ghobashi and Mandie (2006)** noted that, poor personal hygiene with lack of bathing and cleanliness are the most common

causes of skin problems especially eczema, scab, and warts among school children in Egypt.

Regarding school accidents, more than one quarter of the students in this study sample reported wounds as accident in schools (Table 2). This finding was in agreement with the **General Health Insurance and WHO (2001)**, which found the most common accidents related injuries between school children in Egypt are wounds and fractures due to unacceptable school environment as overcrowding of students in playground, unsafe sports equipment and broken stairs. Other school children complain was back pain as revealed in this study was common among less than one third of students in the two schools. In accordance **Mohamed (2001)** clarified that back pain started among school children when they were 11 years of age. This back pain may be from carrying a heavy books bag.

Regarding circulatory diseases, in the present study few of them complained from rheumatic fever and cardiac problems (Table 2). These finding were disagreement with **Mosa (2005)**, who reported in his study in Cairo that circulatory disease complaints were most prevalent among school children.

In relation to diabetes mellitus, a minority of students under study complained from it (table 2). In this respect, **Bartklw (2006)** noted that, the prevalence of diabetes mellitus among US children has jumped for approximately 4%.

According to the research hypotheses:

In this study results there were statistically significant associations between before and after promoting life style program implementation in relation to self health responsibility, eating habits, nutrition awareness, physical activity, stress management, and environmental safety (Table 3). These results were in agreement with **McLellan (2002)**, who found that students had negative perceptions towards their promoting life style and self health responsibility, eating habits, physical activity, stress management and environmental safety.

In relation to student's perception toward school environment and total student health promoting life style, the improvement or changes were statistically significant for all of variables ($P < 0.001$). As well total students' health promoting life style improved after application of the program (Table 4). In a similar study, **McLellan (2002)**, found that students had negative perceptions towards their social school environment, physical school environment and students knowledge about healthy life style.

The relation between student's perception of social and physical school environment and total students health promoting life style was investigated in this study. In relation to student's perception of physical school environment the mean of their

perception in Asmaa Bent Abo Baker School was 39.5 ± 2.1 and school in Nagib Mahfouz it was 33.9 ± 2.256 . There was highly statistically significance difference ($p < 0.001$) between the two schools, while there was no statistically significant difference between the two schools and total students' knowledge about healthy life style (Table 5). The present study result was to some extent in agreement with **Elsamaloty (2000)**, who reported that the students had negative perception towards their social and physical school environment and healthy promoting life style.

As regards the correlation between promoting life style knowledge and students common health problems, there was a highly statistically significant correlation between life style and student health problems (Table 6). In accordance, **Machle and Oickle (2007)** mentioned that the common health problems in schools in developing countries are due to unsanitary school environment, faulty habits of children, lowered body resistance, and more susceptibility to infection due to malnutrition and poor living conditions of the school children.

Concerning the students' health conditions, results of this study revealed that one third of students were under weight. The majority of the students had tooth decay, less than half had rhinitis, more than one third had dandruff and less than one fifth are wearing eye glasses (Table 7). The present study finding were disagreement with **Ahmadi and Tehrani (2009)**, who found that the prevalence of obesity, overweight and underweight represented 9.7 %, 4.4 % and 0.57% respectively. The poor health condition of the students may be due to the low literacy level prevailing among the slums parents, their lack of knowledge and practices about good nutrition; and their poor socio-economic status.

Findings of this study showed that the environments of the studied two schools were not away from noise and dusty places, canteens weren't clean and no proper food preservation, no dry and clean water closets, no collection of refuse in baskets. In classes students' number was more than 30 students, while there was suitable classroom light, sanitary water supply and medical clinics. Only one school had neither sufficient classroom ventilation nor sufficient playground area (Table 8). Poor environment conditions, sufficient water closets /children number were associated with a wide range of health conditions, leading to respiratory infection, asthma and injuries.

Concerning the environmental observation of slums area around school's under study, this study results revealed that slum environment had unsafe cluster of buildings, there were vendors in the street around schools and garbage was collected and thrown down in the streets. Slums area around both studied schools had no sanitary sewage systems, insects and

rodents spread in the street. There were no wide streets and animals' excreta are collected and thrown in the streets around only one school (Table 9). These results agreed with **EL-Shiekh (2005)** who reported that more than half of the sample had no sewage systems. The household wastes disposed through cesspool. The health risks of uncontrolled solid wastes are most serious that contribute to spreading of infectious diseases such as diarrheal diseases. They are likely to be exposed to uncontrolled waste in the streets. Collection of garbage causes rodent and insect vectors that transmit a collection of viruses and disease including hepatitis. Pollutants are everywhere, eating street food is dangerous. Street vendors are selling newly-cooked foods that lure the palate or taste buds of bystanders. The selling foods may be contaminated and cause food poisoning. Food Poisoning can cause fatal effects or even death to students who are at risk when eating street food.

Conclusion:

The study concluded that student's perception improved towards their social, physical school environment and their knowledge about healthy life style after implementing the health promotion program. This improvement was proved statistically.

Recommendations:

Based on the results of this study the following recommendations are suggestion:

1-A health promotion program are strongly needed to school children to improve their lifestyle especially school children living in slum areas, it should include the following:

- Monitoring school children health status and periodic check up to early detecting of any health problems and providing management.

- Health life style of children such as (self-health responsibility, eating habits and nutrition awareness, physical activity and stress management) should be introduced through education in primary schools.

2-The necessity of improving school environmental sanitation for the promotion of student's health.

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